DEPARTMENT OF MECHANICAL ENGINEERING

GOVERNMENT ENGINEERING COLLEGE,

PALANPUR

SELF ASSESSMENT REPORT (SAR)

UNDERGRADUATE ENGINEERING PROGRAMS (TIER-II)

CAY: 2020-21

SAR Contents

PART A: Institutional Information

1. **Name and Address of the Institution:**
   Name: Government Engineering College, Palanpur
   Address: At - Jagana, Palanpur-Ahmedabad Highway, Palanpur-385001, Gujarat, India
2. **Name and Address of the Affiliating University:**
   Name: Gujarat Technological University (GTU)
   Address: Gujarat Technological University, Nr.Vishwakarma Government Engineering College, Nr.Visat Three Roads, Visat - Gandhinagar Highway, Chandkheda, Ahmedabad, Gujarat-382424
3. **Year of establishment of the Institution:** 2009
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)	☒

Provide Details: Government Engineering College, Palanpur is one of the premier institutes ofGujarat. Institute was established in 2009. Institute is run by Department of Technical Education, Government of Gujarat.

6. **Other Academic Institutions of the Trust/Society/Company etc., if any:** Not Applicable

Table A.1 Details of other academic institutes

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:

Table A.2 Details of programs offered by institute

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	Mechanical Engineering (B.E.)	Department of Mechanical Engineering	2009	60	-	-	F.No. Central/1-9317804184/2021/EOA Date: 25-Jun-2021	Applying First time.
2	Civil Engineering (B.E.)	Department of Civil Engineering	2009	60	-	-	F.No. Central/1-9317804184/2021/EOA Date: 25-Jun-2021	Not eligible for accreditation
3	Electrical Engineering (B.E.)	Department of Electrical Engineering	2009	30	-	-	F.No. Central/1-9317804184/2021/EOA Date: 25-Jun-2021	Not eligible for accreditation
4	Mining Engineering (B.E.)	Department of Mining Engineering	2009	30	-	-	F.No. Central/1-9317804184/2021/EOA Date: 25-Jun-2021	Not eligible for accreditation

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

Table A.3 Details of programs to be considered for accreditation

Sr. No.	Program Name
1	B.E. in Mechanical Engineering

9. Total number of employees in the institution:

A. Regular Employees (Faculty & Staff)

Table A.4 Details of Regular Employees

Items		CAY (2020-21)		CAYm1 (2019-20)		CAYm2 (2018-19)	
		Min	Max	Min	Max	Min	Max
Faculty in Engineering	M	27	28	27	28	26	29
	F	2	3	1	1	1	1
Faculty in Maths, Science & Humanities	M	4	4	3	4	3	3
	F	2	2	2	2	1	2
Non-Teaching Staff	M	9	10	10	11	10	11
	F	4	5	3	6	3	3

B. Contractual Staff Employees (Faculty & Staff)

Table A.5 Details of Contractual Employees

Items		CAY (2020-21)		CAYm1 (2019-20)		CAYm2 (2018-19)	
		Min	Max	Min	Max	Min	Max
Faculty in Engineering	M	3	4	4	4	4	4
	F	0	1	1	1	1	1
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 Engineering

Item	CAY (2020-21)	CAYm1 (2019-20)	CAYm2 (2018-19)
Total no. of Boys	672	716	806
Total no. of Girls	44	38	51
Total no. of Students	716	754	857

11. Vision of the Institution:

To be a leading technical institute facilitating transformation of human resources into socially responsible engineering professionals for sustainable development.

12. Mission of the Institution:

(1) To achieve academic excellence by developing state-of-the-art laboratories and academic infrastructure.
(2) To create an ecosystem that promote value based technical education, innovation and entrepreneurship for sustainable development.
(3) To contribute to industry and society by providing technical and consultancy services.
(4) To enhance technical competencies of human resources by providing need base trainings and quality improvement programs.

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

I. Name: Prof. (Dr). K. B. Judal
Designation: Principal
Mobile No: 9375844848
Email id: gec-palanpur-dte@gujarat.gov.in

II. NBA Coordinator, if designated: Yes
Name: Prof. (Dr.) J. A. Vadher
Designation: Professor (Head, Mech.)
Mobile No: 9998944101
Email id: javadher1@gmail.com

PART B: Criteria Summary

Name of the program: Mechanical 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**

CRITERION 1	Vision, Mission and Program Educational Objectives	60

1. VISION, MISSION AND PROGRAM EDUCATIONAL OBJECTIVES (60)

1.1. State the Vision and Mission of the Department and Institute (5)

Institute Vision

"To be a leading technical institute facilitating transformation of human resources into socially responsible engineering professionals for sustainable development"

Institute Mission

1. To achieve academic excellence by developing state-of-the-art laboratories and academic infrastructure.
2. To create an ecosystem that promote value based technical education, innovation and entrepreneurship for sustainable development.
3. To contribute to industry and society by providing technical and consultancy services.
4. To enhance technical competencies of human resources by providing need base trainings and quality improvement programs.

Department Vision

"To produce competent mechanical engineers to fulfil needs of society for sustainable development"

Department Mission

1) To impart quality technical education in Mechanical Engineering with professional skills.

2) To develop linkages with industry for exposure about real life problems and its feasible solution.

3) To promote lifelong learning, Innovation and entrepreneurship for sustainable development

4) To assimilate social, cultural and ethical values for betterment of society.

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

PEO1: Apply knowledge of mechanical engineering in industries, public sector unit or as an entrepreneur for successful professional career.

PEO2: Exhibits leadership qualities with demonstrable attributes for betterment of society.

PEO3: Pursue higher education for professional development.

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

- The vision and mission of the institute and department are published on the Institutional website (http://www.gecpl.cteguj.in/ and https://gecpalanpur.ac.in/) which can be accessed by all the stakeholder's and future students.
- The vision and mission are displayed at prominent locations in the campus can be viewed by Students, parents, faculty members and others.
- The vision and mission are published in the brochures given to the Fresher students in their orientation program.
- By circulating the same to students, public and stake holders through brochures, newsletters, and student files etc.

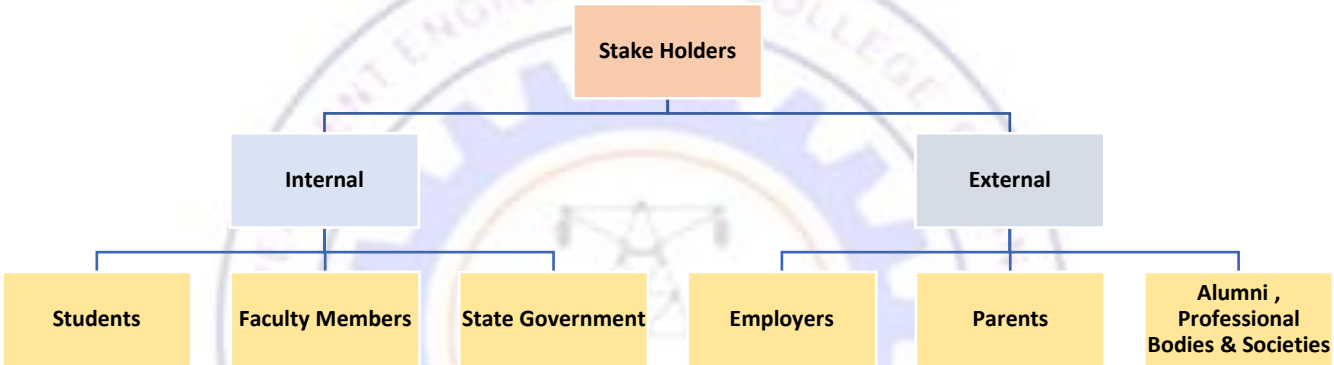


Fig 1.3.1 Flowchart Showing the Various Types of Stakeholders

Student:

- They have most important role in the program.
- Their feedback helps institute/department to improve pedagogy, to implement innovative teaching-learning methodologies, to improve other facilities and to organize various co-curricular activities.
- Their suggestion helps to introduce mandatory and elective courses to meet the program objectives.

Faculty:

- They are important stake holders as they directly interact with the students through regular classes/laboratories and assess their performance through various evaluation techniques.
- They are members of various committees which execute/monitor curricular and co-curricular activities.
- They are contributing for framing Vision, Mission, PEOs, and Course Outcomes.

State Government:

- Commissionerate of Technical Education frames the policies of Governance in tuned with the vision of State Government.
- Looks after the quality of Technical Education and placement.
- Allocates the grant for above mentioned objectives.

Employers:

- They are one of the end users of the graduates.
- They provide suggestion for curriculum gap to make the students industry ready and improve institute-industry interactions.

Parents:

- They entrust the program so that their wards meet their career goal(s).

Alumni:

- They are the ambassadors of the program and their good standing indicates long term success of the program.
- Their feedback helps to make necessary changes in curriculum to meet the challenging demands of the real world.

Professional bodies & Societies:

- The institute interact with the industries through them.
- Their members deliver expert sessions and permit the students for internship, project work and industrial visit thus helping to bridge the gap between industries and institute.
- The institute also interact with societies and nearby region.

The vision, mission and PEOs are disseminated to the stakeholders of the program i.e., administration, faculty, students, staff, alumni, parents, current and prospective employers through continuous interaction.

The Vision and Mission of the department are published and disseminated through following:

Sr. No.	Place of Dissemination	Meant For
1	Institute and Departmental Website	Internal & External Stakeholder
2	Display Board at the entrance of department and Corridors	Internal & External Stakeholder
3	Departmental Notice Board	Internal & External Stakeholder
4	HoD Office, Departmental Laboratories and Faculty cabins	Internal Stakeholder
5	Student – Teacher Committee Meeting	Internal Stakeholder
6	Faculty Development Program, Workshop, Seminar	Internal & External Stakeholder
7	Orientation Program (Venue & Brochure)	Internal & External Stakeholder
8	Student Files	Internal Stakeholder

The PEOs of the department are published and disseminated through:

Sr. No.	Place of Dissemination	Meant For
1	Institute and Departmental Website	Internal & External Stakeholder
2	Departmental Notice Board	Internal & External Stakeholder
3	HoD Office, Departmental Laboratories, and Faculty cabins	Internal Stakeholder

1.4. State the process for defining the Vision and Mission of the Department, and PEOs of the program (25)

The Vision and Mission Statements of the department have been revised by considering the institutional Vision & Mission. The department has adopted a consultative approach to establish its vision and mission by involving the stakeholders of the institute such as faculty, students, staff, parents, alumni, industrial experts, and employers. While articulating the vision and mission statements for the department the future technology and societal requirements were also considered.

The whole process is illustrated through the flow chart shown as under.

- Considering the institutional Vision and Mission as the base and incorporating global projections in the field of Mechanical Engineering and allied fields, the Vision and Mission Statements of the department have been defined.
- The process was carried out by SWOT analysis of internal and external stake holders. Keywords were included and suggested to incorporate in the Vision and Mission.
- The departmental faculty members met number of times to develop and cultivate a strong and meaningful Vision and Mission statements
- A series of discussions were conducted simultaneously among Program Assessment Committee (PAC), Alumni representatives, Industry experts to finalize the Vision, Mission and PEOs.
- The entire process has accepted by department PAB (Programme Advisory Board) and approved by IQAC of institute.

Process of defining Vision, Mission and PEO's of the department is shown in Fig. 1.4.2 and 1.4.3 respectively.

Fig 1.4.1 Stake holders at Round Table Meet

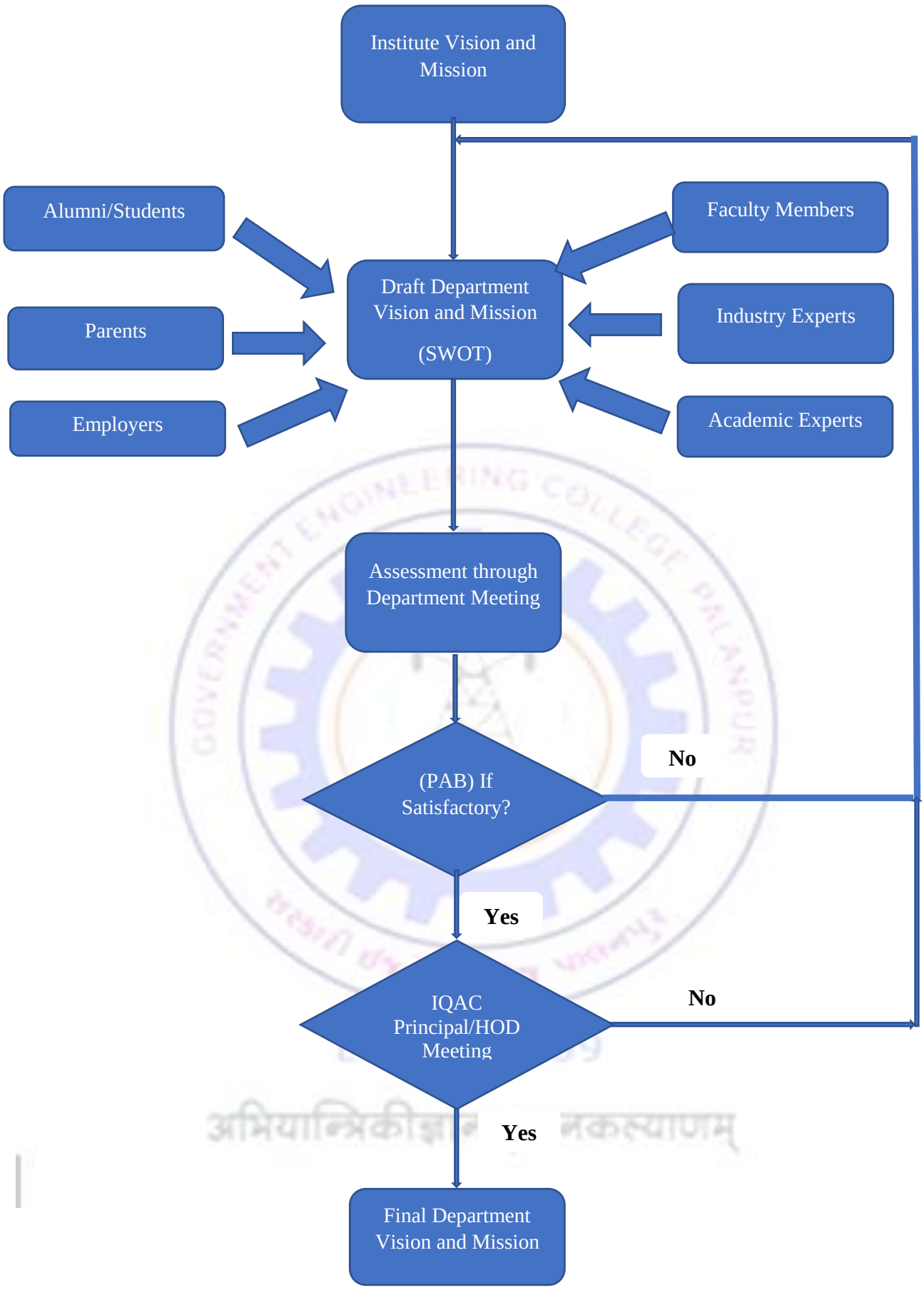


Fig 1.4.2 Process for Defining Vision and Mission of the Department

The Vision, Mission and PEOs were also finalized based on the following components:

- Departmental meeting
- Feedback from industries
- Feedback from students/ alumni
- Parents meet

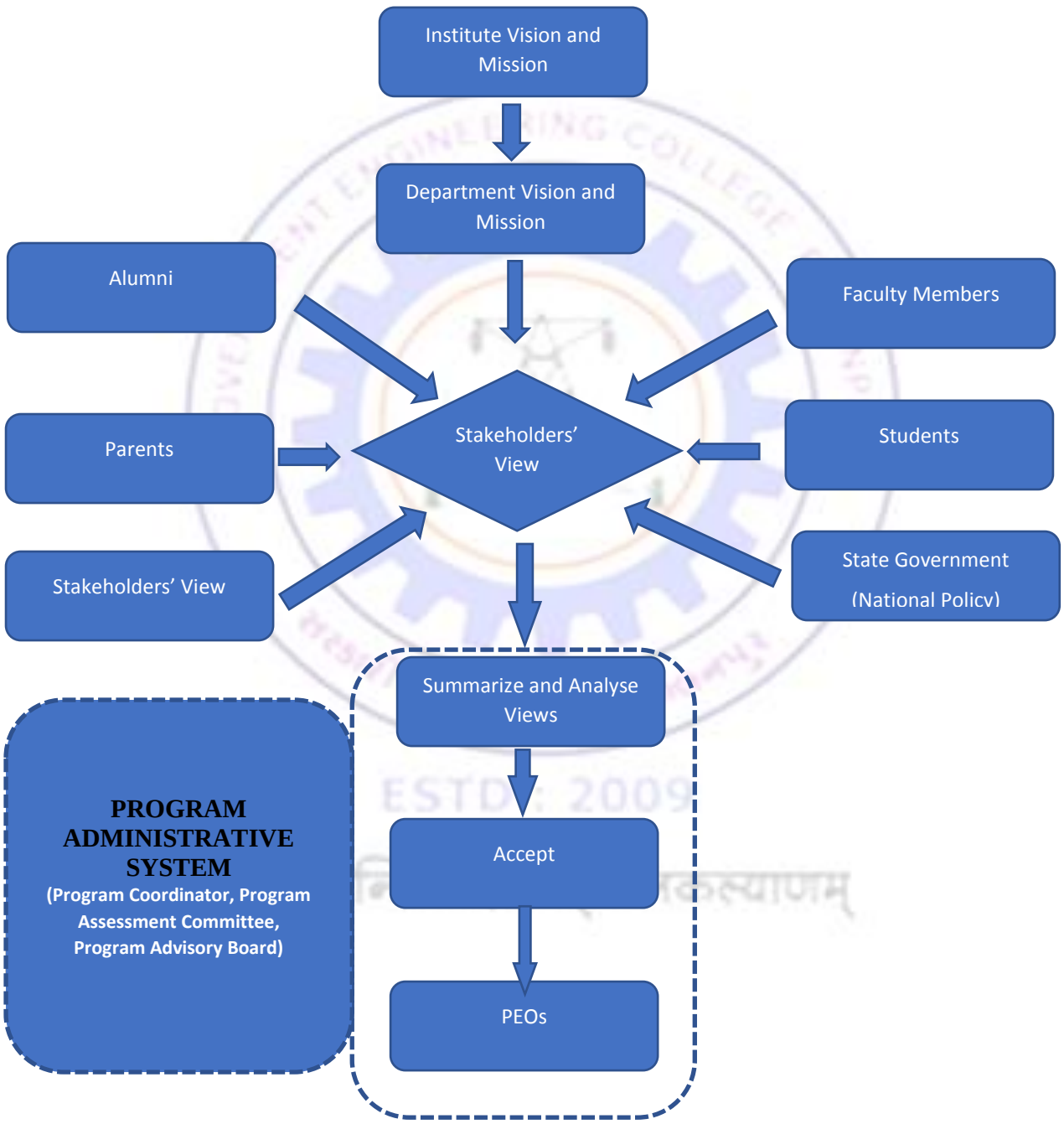


Fig 1.4.3 Process for Defining PEOs of the Department

1.5. Establish consistency of PEOs with Mission of the Department (15)

The PEOs ensure the accomplishments of the mission of the Department with special emphasis on technical competence of engineers, value addition sustainable solutions to engineering problems. For the mapping of PEOs and Mission, several meetings of the faculty members were conducted at department level. The feedback of the faculty members were taken into consideration and the mapping was finalized as below.

Table 1.5.1 Mapping of PEOs with Mission of the Department

PEO Statements	M1	M2	M3	M4	Justification
Apply knowledge of mechanical engineering in industries, public sector unit or as an entrepreneur for successful professional career.	**3**	**3**	**2**	**2**	PEO1 maps substantially with M1 and M2 as it is related to gaining quality knowledge in the field of mechanical engineering and to apply/correlate to solve real life problems of industry and society. As students are gaining professional skills and confidence through well-established eco system of start-up, innovation and entrepreneurship. PEO 1 maps moderately with M3 and M4 as it is related with the choosing career as an entrepreneurship with inculcated human values and ethics for betterment of society and country at large.
Exhibits leadership qualities with demonstrable attributes for betterment of society.	**2**	**2**	**3**	**3**	PEO 2 maps moderately with M1 and M2 as it direct students to implement their innovative ideas for betterment of society through team work which promotes leadership attributes. PEO 2 maps substantially with M3 and M4 as students are gaining management and leadership attributes through organization of extracurricular and relevant activities. The arrangement of induction programme, finishing schools and NSS incorporate the social service and ethical practices in their professional life.
Pursue higher education for professional development.	**2**	**2**	**3**	**1**	PEO 3 maps moderately with M1 as imparting quality education in mechanical engineering motivate students to opt for further studies and career. PEO 3 maps moderately with M2 as it relates involvement of students in real life problem based projects, mentoring for their career and professional development inspire students to pursue higher education. PEO 3 maps substantially with M3 as students are sensitized and guided for innovation and start up to provide environment friendly solution to society. Innovative projects carried out in last three year supports it. PEO 3 maps slightly with M4 as it develops social and ethical values for professional development.

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

CRITERION 2	Program Curriculum and Teaching – Learning Processes	120

2. PROGRAM CURRICULUM AND TEACHING – LEARNING PROCESSES (120)

2.1 Program Curriculum (20)

2.1.1 State the process used to identify extent of compliance of the University curriculum for attaining the Program Outcomes and Program Specific Outcomes as mentioned in Annexure I. Also mention the identified curricular gaps, if any (10)

This institute is affiliated to Gujarat Technological University (GTU). The course curriculum for B.E. in Mechanical engineering is provided by the university. Each syllabus has mention of course title with course code, semester in which it is offered, teaching and examination scheme, content, percentage weightage of each topic, distribution of marks for each cognitive level, course outcomes, list of experiments, list of equipment and reference books. University started it academic activities in 2008 and first revised curriculum has been implemented from academic year 2013-14 and second revised curriculum has been started to implement from year 2018-19. Various courses offered by the GTU can be categorized as follows.

- Humanities and Social Sciences
- Basic Science Courses
- Engineering Science courses
- Professional core courses
- Professional Elective courses
- Open Elective courses and
- Project work

Following process is used to identify the extent of compliance of University curriculum for attaining the POs and PSOs.

- Identify/ List down Course Outcomes for each subject (as GEC, Palanpur is affiliated to GTU, normally we use the COs mentioned in the curriculum. Mechanical Engineering Department has reviewed COs of all the courses offered to Mechanical Engineering students and revision in COs has been made where ever required. The COs were reviewed and revised under the guidance of PAC and approved in PAB).
- Map each Course Outcome with POs and PSOs.
- The curricular gap is identified and analyzed on the basis of faculty inputs, the CO attainment of individual course and feedback.
- The curricular gap is discussed in the PAC meeting and the content beyond the syllabus is delivered to the students through tutorial, extra classes or expert talks to bridge the curricular gap.

Table 2.1.1.1 Curricular Gaps CAY*m*1 (2019-20)

Sr. No.	Course Name	Course Code	Gap Description	Proposed Action
1	Cyber Security	2150002	Prevention against Hacking and Cyber-attack in present scenario	Workshop
2	Renewable Energy Engineering	2181910	Energy Efficiency technologies, Climate Change and Renewable energy technology	Workshop
3	Manufacturing Processes	3141908	Melt treatment of Non-ferrous materials	Expert Lecture
4	Manufacturing Processes	3141908	Advances in sheet metal forming	Expert Lecture

Table 2.1.1.2 Curricular Gaps CAY*m*2 (2018-19)

Sr. No.	Course Name	Course Code	Gap Description	Proposed Action
1	Automobile Engineering	2181915	Description and working of Solar car	Extra Lecture
2	Engineering Graphics	2110013	Enhancing knowledge on Projection of Line	Extra Lecture

Table 2.1.1.3 Curricular Gaps CAY*m*3 (2017-18)

Sr. No.	Course Name	Course Code	Gap Description	Proposed Action
1	Automobile Engineering	2181915	Description and working of Solar car	Extra Lecture
2	Manufacturing Process-II	2141908	Welding Technology	Expert lecture and demonstration
3	Refrigeration and Air Conditioning	2161908	HVAC Designing	Expert lecture
4	Computer Aided Manufacturing	2171903	Industrial Automation with PLC	Expert lecture
5	Engineering Graphics	2110013	Enhancing Engineering Graphics understanding using Multimedia	Expert lecture
6	Computer Aided Design	2161903	Design using Advanced CAD software	Expert lecture

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

- The topics beyond the syllabus to be covered are identified and analyzed on the basis of faculty inputs, the CO attainment of individual courses and feedback.
- The topics are discussed in the PAC meeting and the content beyond the syllabus is prepared accordingly.
- The following means and methods are used to deliver content beyond the University curriculum for attaining the Program Outcomes.
  - Extra classes
  - Tutorials
  - Expert talks
  - Video lectures
  - Workshop

Table 2.1.2.1 Content beyond the Syllabus CAY*m*1 (2019-20)

Sr. No.	Course Name	Action Taken	Date Month Year	Resource Person with Designation	% Attendance	Relevance to PO's & PSO's
1	Prevention against Hacking and Cyber-attack in present scenario	Workshop	25/07/2019, 26/07/2019	Mr. Jigar Joshi. R D Creation, Ahmedabad	76%	PO5, PO12
2	Energy Efficiency technologies, Climate Change and Renewable energy technology	Workshop	04/10/2019	Shri R N Padya, Dynamic Consultancy, Ahmedabad	64	PO8, PO12
3	Melt treatment of Non-ferrous materials	Expert Lecture	24/12/2019	Prof. V B Patel Professor Mech. Engg. Dept. LECE, Morbi	67	PO3,PO4
4	Advances in sheet metal forming	Expert Lecture	31/12/2019	Prof. A B Dhruve Professor Mech. Engg. Dept. VGEC, Chandkheda	62	PO1,PO3

Table 2.1.2.2 Content beyond the Syllabus CAY*m*2 (2018-19)

Sr. No.	GAP	Action Taken	Date- Month Year	Resource Person with Designation	% Attenda nce	Relevanc e to PO's & PSO's
1	Description and working of Solar car	Extra lecture	09/04/2019	Prof A. D. Patel, Asst. Prof. , Mech. Engg. Dept., GEC, Palanpur	72	PO3,PO5, PSO2
2	Enhancing knowledge on Projection of Line	Extra lecture	05/10/2018	Prof. V. D. Patel, Asst. Prof. , Mech. Engg. Dept., GEC, Palanpur	69	PO1, PO5, PSO1

Table 2.1.2.3 Content beyond the Syllabus CAY*m*3 (2017-18)

Sr. No.	GAP	Action Taken	Date Month Year	Resource Person with Designation	% Attenda nce	Relevance to PO's & PSO's
1	Welding Technology	Expert lecture	20/03/2018	Mr. Jignesh Patel and Mr. Bhavya Patel Directors, From: Technosparc Engenderers Pvt. Ltd.	77	PO1, PO2, PSO1
2	HVAC Designing	Expert lecture	17/04/2018	Mr. Mrityunjaykumar Regional Manager, Sofcone India Pvt. Ltd.	72	PO3, PSO2
3	Industrial Automation with PLC	Expert lecture	17/04/2018	Mr. Mrityunjaykumar Regional Manager, Sofcone India Pvt. Ltd.	64	PO6, PSO1
4	Enhancing Engineering Graphics understanding using Multimedia	Expert lecture	07/12/2017	Prof Anand S. Patel Asst. Prof. Mech Engg. Dept. Institute of Technology Nirma.	78	PO1, PO5, PSO1
5	Description and working of Solar car	Extra lecture	20/04/2018	Prof A. D. Patel, Asst. Prof. , Mech. Engg. Dept., GEC, Palanpur	79	PO4,PO5, PSO2
6	Design using Advanced CAD software	Expert lecture	08/08/2017	Mr. Nimesh Patel, Director, Khodiyar CAD center,	72	PO3

2.2 Teaching – Learning Processes (100)

2.2.1 Describe Processes followed to improve quality of Teaching & Learning (25)

- Department follows the academic calendar provided by GTU
- Course choice is done by faculties at the end of previous semester so that faculty members can devote sufficient time to prepare lesson plans, lecture notes (soft and/or hard copies), power point presentation. Faculty members also compile video lectures to supplement their teaching. They also prepare lab manuals during semester break.
- A course coordinator is assigned for each course. The course coordinator is responsible for all academic activities pertains to his/her course i.e. students' attendance record, maintaining course file, compiling Mid Semester Test (MST) question paper, compiling marks of various components etc.
- Each course coordinator, in association with other subject teachers prepare a course file which contains all academic documents (university syllabus, lesson plan, list of practical, lab manual, MST syllabus, Remedial MSE (RMSE) syllabus, teaching materials, assignments, attendance sheets and mark sheets).
- During laboratory sessions, experiments are conducted.
- Laboratory manuals explaining the details of the experiment are available with the course coordinator and are given to students during the semester
- The faculty members of department adopt various innovative Teaching & Learning methodologies to create the best learning environment for student which include traditional chalk & talk methods, presentations, video lecturing, collaborative learning with other departments
- Department is oriented towards Outcome based Education (OBE) and has actively introduced and utilizing the CO-PO mapping to cater the learning needs of students
- Department regularly arranges expert talks and seminars on the current trends and technologies with the help of industry personnel and academicians.
- Faculties are deputed for induction programs and refresher courses to improve the methodology and quality of teaching – learning.
- Motivating and guiding students for higher studies and university ranks
- Industrial visits are conducted to bridge the gap between industry and academia.
- Mentoring sessions are conducted to provide project guidance to students
- Faculties are voluntary conducting extra lectures to prepare students for competitive examination like GATE.
- Monitoring of weaker and motivating of brighter students are carried out through counseling.

Collaborative Learning:

Various subjects and activities done by the department help to inculcate collaborative learning among the students. With an aim to develop a design-based learning system, GTU has

introduced a very new, innovative – Design Engineering subject from 3rd to 6th semesters. It is a first of its kind initiation in Indian Education System. In many parts of the world the term 'Project-based Learning' is used for a similar idea. 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 final year a group of 4-5 students take up a yearlong project. The project definition may be based on the live industry problem or a research based project given by a faculty member.

GEC, Palanpur organizes various students' events which help for their collaborative learning. Every year GEC, Palanpur organizes its annual national level techfest called PRAXES (Practices of Arts Science and skills). It comprises of various events, many of them are group events. Some events require interdisciplinary collaboration of the students.

2.2.2 Quality of internal semester Question papers, Assignments and Evaluation

(20) Question papers

- Questions of MST are aligned with cognitive levels of Bloom's Taxonomy.
- Level of questions is decided as per the COs which are prepared according to the Bloom's Level.
- While preparing the question paper, it is ascertained that the optional questions are asked from the same CO so that students will attempt all the question related to COs covered as per MST syllabus.
- After assessment of the answer books, mark sheet is prepared as per COs using spreadsheet which helps to calculate attainment level of different POs.

Assignments

- Assignments are given to the students to enhance their subject knowledge. Assignment questions are as per different cognitive level of Bloom's Taxonomy. In many cases assignments are design to enhance the higher order thinking of the students.
- Assignments are prepared and given to the students according to the lesson planning and course content covered in the class.
- The assignments are prepared in such a manner that it covers the all COs of a course. Students are required to submit all the assignments.
- After assessment of the assignment, mark sheet is prepared as per COs using the spreadsheet which helps to calculate attainment level of different POs.

Evaluation

Evaluation schemes for various subjects offered to the students of Mechanical Engineering is summarized as follows.

Table 2.2.2.1 Maximum marks as per GTU scheme for different courses

Sr. No.	Evaluation Components	Nature of course		
		Subjects having theory and practical and/or tutorial component	Subjects having only theory component	Subjects having only practical component
1	End Semester Examination (E)	70	70	
2	Continuous Evolution/Mid Semester Exam (M)	30	30	
3	End Semester Practical Examination (V)	30	-	80
4	Continuous Evaluation Practical (I)	20	-	20

Continuous Evolution marks are mapped with COs as per their weightage in the assessment tool. As GTU does not provide marks obtained by the students for each COs, equal weightage is assigned to all the COs for E and V components. Also equal weightage to all the COs is assigned for I component. To pass a particular subject, student has to clear all the components of the subject. Passing percentage for ESE and Continuous Evolution are 33% and 40% respectively. However for V and I components the passing percentage is 50%.

Department follows continuous evaluation process to evaluate students' performance. The teacher designs the experiments according to the teaching plan of GTU in such a manner that it covers all the COs of a course. Continuous evaluation is done and marks are awarded according to the performance of the students in conducting the experiments, calculations made and conclusions drawn, answering the quiz and oral questions. Teacher follows a systematic procedure for ascertaining relationships between COs and POs. Students are asked to submit the assignments regularly once the topic is completed in class room teaching.

2.2.3 Quality of student projects (25)

Before commencement of 7th semester, all the faculty members are requested to submit the list of projects which they intend to offer the final year students. The compiled list is

displayed on the notice board. At the beginning of the semester, students are addressed by the project coordinator and procedure for project selection and various aspects of Project Management and Monitoring System (PMMS) implemented by GTU are explained. Students are also motivated to visit the industry during semester break to find the industrial problems. Many students undertake industrial training during semester break and during the training they also scout the industrial problem which they can take up as their final year project. Students are also encouraged to work on their own unique ideas. Project proposal is presented to the project review committee and after careful examination of the idea presented by the teams of students, final allocation of project and if required allocation of project guides is done by project coordinator in consultation with HoD.

Implementation details for Projects:

- Students are briefed about the objectives, outcomes and specific outcomes of the projects and steps to be followed.
- Selection of area in which students are interested to do the project.
- Identification of Project (Industry Defined Project (IDP) or User Defined Project (UDP))
- Allotment of Project
- Projects having innovation component are advised to apply for SSIP grant for making prototype and patent filling.
- Internal evaluation during the semester
- Motivating the students to undertake the project which involve simulation, design and prototyping
- Project display during PROJECT FAIR which is open for common people.
- Final university evaluation
- GTU also follows systematic approach towards final year projects. GTU offers an online portal facility to support continuous evaluation process throughout project duration. Following are the step hierarchy for online portal called PMMS (Project Monitoring and Mentoring System).
    - Team registration done by students with their user ID and password
    - Team approval done by faculty with their user ID and password
    - Uploading of 4 different periodic progress reports by students at different intervals during the year
    - Periodic approval of progress reports by faculty
    - Uploading Business Model Canvas (BMC) report by students
    - Approving Business Model Canvas (BMC) by faculty
    - Uploading Patent Drafting Exercise (PDE) if applicable
    - Approving Patent Drafting Exercise (PDE) by faculty
    - Uploading Project Report by students
    - Approving Project Report by faculty
    - Uploading Plagiarism Search Report done by students
    - Approving Plagiarism Search Report by faculty
    - Final completion certificate generated by portal after completion of all approvals

POs and PSOs addressed through Projects:

Project is a unique course where students can implement the knowledge which they have acquired during their past semesters for the solution of real life problems. It is course where almost all the POs and PSOs of the program are addressed. It is expected to work in a group which enhances various skills like leadership, team building, project management and finance, oral and written communication. It is emphasized during selection of the project that societal and environmental problems are addressed for sustainable solution. During the project work students are expected to review the related literature including patent search. It is mandatory to review at least five patents filled in the relevant field which enhance their problem analysis skill. Based on the research gap and using ideation and empathy canvas as a tool, students are expected to develop a unique solution using modern tools and techniques. Each group of students need to submit project report for the evaluation which must be checked for the plagiarism.

Table 2.2.3.1 List of projects for CAY (2020-21)

Group No.	Title of the project	Project Guide
1	HYBRID ELECTRICAL VEHICLE	A.D.PATEL
2	DEVELOPMENT OF DOUBLE PASSED SOLAR DRYER INTEGRATED WITH PCM BED FOR COTTON SEED DRYING	V.D.PATEL
3	SOLAR COVID KIOSK	A.B.PATEL
4	DESIGN AND DEVELOPMENT OF SHELL AND TUBE TYPE HEAT EXCHANGER FOR SOLAR ENERGY STORAGE USING PCM	V.D.PATEL
5	360 DEGREE FLEXIBLE DRILLING MACHINE.	N.A.PATEL
6	CONTACTLESS ELECTROMAGNETIC BRAKING SYSTEM	P.N.BOKA

7	PRODUCT DEVELOPMENT OF GROOVE CUTTING MACHINE WITH MULTI CUTTING OFF WHEELS	A.D.PATEL
8	SOLAR DISINFECTION AND SANITIZATION TUNNEL WITH ULTRA VIOLET RAY	N.T.RAVAL
9	DEVELOPMENT OF DRILLING MACHINE ATTECHMANT FOR MILLING OPERATION	N.A.PATEL
10	LEVITATING FRICTIONLESS VERTICAL WINDMILL	P.N.BOKA
11	DESIGN AND FABRICATION OF SOLAR DESALINATION	S.K. DABHI
12	DESIGN , DEVELOPMENT AND MANUFACTURING OF SOCKET FOR EASY MOUNTING OF CEILING FAN	V.K.PATEL
13	MATHEMATICAL MODELING OF MAGNETIC ABRASIVES FINISHING PROCESS	A.R.CHAUDHARY
14	EXPERIMENTATION OF MAF TO FINISH SS 420 USING RESPONSE SURFACE METHODOLOGY	A.R.CHAUDHARY
15	DESIGN & ANALYSIS OF BAR BANDING MACHINE	A.K.PATEL

First, second and third ranks have been identified in Project exhibition PROJECT FAIR 2020-21, which was organized in online mode.

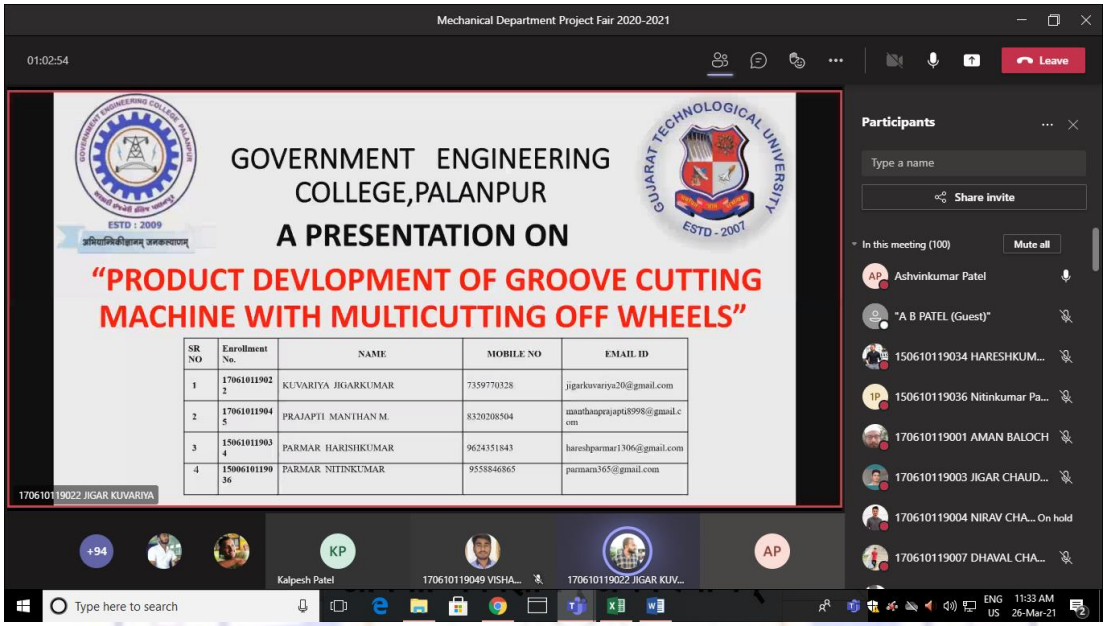


Fig. 2.2.3.1 Project exhibition at PROJECT FAIR 2020-21

Table 2.2.3.2 List of projects for CAY*m*1 (2019-20)

Group No.	Title of the project	Project Guide
1	MANUFACTURING OF CENTRIFUGAL CASTING MACHINE TO ENHANCE THE MECHANICAL PROPERTIES	A.K.PATEL
2	DESIGN OF OIL EXPELLER PRESS WITH STRUCTURAL ANALYSIS OF SCREW	N.T.RAVAL
3	INNOVATIVE TREE CAGE DESIGN - A NOVEL APPROACH	A.D.PATEL
4	DEVELOPMENT OF HANDY GROOVE CUTTER FOR MORE THAN 5MM THICK PLATES OF STRUCTURAL MATERIALS	A.D.PATEL
5	DESIGN OF CENTRIFUGAL CASTING MACHINE TO ENHANCE THE MECHANICAL PROPERTIES	A.K.PATEL
6	DEVELOPMENT OF SOLAR ENERGY STORAGE UNIT WITH PARAFFIN WAX AS A PHASE CHANGE MATERIAL	V.D.PATEL
7	DEVELOPMENT OF DOUBLE PASSED BAFFLED SOLAR DRYER FOR COTTON SEED DRYING	V.D.PATEL

8	PERFORMANCE IMPROVEMENT AND INVESTIGATION OF MAGNETIC ABRASIVE FINISHING PROCESS	A.R.CHAUDHARY
9	IMPROVEMENT AND PERFORMANCE TESTING OF AVAILABLE ELECTROCHEMICAL MACHINE	A.R.CHAUDHARY
10	FABRICATION OF CHOPPER MACHINE	A.D.PATEL
11	DEVELOPMENT OF INNOVATIVE MANUFACTURING SYSTEM FOR CURVED SURFACES	A.R.CHAUDHARY
12	DEVELOPMENT OF ECO-FRIENDLY TOURISM VEHICLE USING FLYWHEEL	N.T.RAVAL
13	AUTOMATED WASTE STORAGE AND TRANSPORTATION SYSTEM FOR WASTE DISPOSAL	N.A.PATEL
14	ROUGH TERRAIN ROBOT USING ROCKER BOGIE MECHANISM	P.N.BOKA
15	POWER GENERATION USING SPEED BREAKERS	P.N.BOKA
16	ENERGY AUDIT IN AMP FORGING	N.A.PATEL
17	PHYSICAL METALLURGICAL ANALYSIS OF ALUMINIUM SILICONE ALLOYS	A.K.PATEL
18	MANUFACTURING OF VERTICAL CENTRIFUGAL CASTING MACHINE WITH OPTIMUM DESIGN	A.K.PATEL
19	OPTIMIZATION OF PLASMA ARC CUTTING PROCESS ON MS-2062 USING OF TAGUCHI METHOD	N.T.RAVAL
20	CHAINLESS BICYCLE	P.N.BOKA

Project mentioned at 8, 13 and 14 have been identified as potential products for the start- up and they have been funded by Government College of Engineering, Palanpur under Student Start-up and Innovation Policy (SSIP) of Government of Gujarat.

Table 2.2.3.3 List of projects for CAY*m*2 (2018-19)

Group No.	Title of the project	Project Guide
1	TO DESIGN THE SYSTEM FOR PREDICTION OF BRAKAGE OF CLUCH WIRE/BRAKE WIRES IN TWO WHEELER	A.B.PATEL
2	DEVELOPMENT OF SHEET METAL CUTTING MACHINE USING PNEUMATIC POWER	A.K.PATEL
3	DEVELOPMENT OF PNEUMATIC BENDING MACHINE	A.K.PATEL
4	DESIGN AND FABRICATION OF CONTINUOUS VARIABLE TRANSMISSION-A STUDY MODEL	A.D.PATEL

5	WATER LIFTING USING ARCHIMEDES SCREW CONCEPT-A WAY TO SAVE ELECTRICITY	A.D.PATEL
6	MAINTENANCE & PERFORMANCE TESTING OF SOLAR FLATE PLATE COLLECTOR TEST RIG	V.D.PATEL
7	DESIGN AND DEVELOPMENT OF AUTOMATIC ELECTRIC AGRO-VEHICLE	N.A.PATEL
8	DEVELOPMENT OF FIVE AXIS ARM ROBOT	N.T.RAVAL
9	TO LIFT THE ENGINE AND HEAVY PART FROM THE VEHICLE UNDER MAINTENANCE WITHOUT DAMAGE TO OTHER PARTS AND WITH COMFORT	A.B.PATEL
10	DESIGN AND DEVELOPMENT OF TMT BAR BENDING MACHINE	N.A.PATEL
11	DESIGN AND DEVELOPMENT OF SPOT WELDING ROBOT	N.A.PATEL
12	DESIGN AND FABRICATION OF METAL DETECTOR AND EXTRACTOR IN CATTLE FEED	P.N.BOKA
13	DESIGN & FABRICATION OF AUTOMATIC SEALING OF BAGS FOR CATTLE FOOD INDUSTRY	P.N.BOKA
14	DESIGN AND DEVELOPMENT OF PEDAL OPERATED REAL TIME HACKSAW MACHINE	N.T.RAVAL
15	DESIGN AND DEVELOPMENT OF MAGNETIC ABRASIVE FINISHING MACHINE	A.R.CHAUDHARY
16	DESIGN & DEVELOPMENT OF ELECTROCHEMICAL DISOLUTION MACHINE	A.R.CHAUDHARY
17	MAINTANCE & PERFORMANCE TESTING OF HEAT PUMP TRAINER TEST RIG	V.D.PATEL
18	INVESTIGATE EFFECT OF WELD PARAMETERS ON WELD JOINT IN TIG BY SOLDAMATIC SIMULATOR	N.A.PATEL

First, second and third ranks have been identified in Project exhibition PROJECT FAIR 2018-19.

Fig. 2.2.3.2 Project exhibition at PROJECT FAIR 2018-19

Table 2.2.3.4 List of projects for CAY*m3* (2017-18)

Group No.	Title of Project	Guide
1	AUTOMATED 5 DOF ROBOTIC ARM MECHANISM (1732)	P.N.BOKA
2	DESIGN AND DEVELOPMENT OF BATTERY OPERATED CAR JACK WITH AUTOMATION	K.V.PATEL
3	DESIGN AND DEVELOPMENT OF BULLOCK CART WITH 3 -DOF	K.V.PATEL
4	DESIGN AND DEVELOPMENT OF DUNG CLEANING SYSTEM IN BYRE	N.A.PATEL
5	DESIGN AND DEVELOPMENT OF SHOCK-ABSORBING WHEEL WITH INTEGRAL SUSPENSION	N.A.PATEL
6	DEVELOPMENT OF COMPOUND MECHANISM FOR CUTTING, GRINDING AND BUFFING	A.D.PATEL
7	POLLUTION CONTROL WASTE PLASTIC FIRE GAS	A.K.PATEL
8	SOLAR POWERED GRASS CUTTING AND INSECTICIDE SPRAYING MACHINE	A.B.PATEL
9	TOGGLE MECHANICAL ADVANTAGE OPTIMIZATION	K.V.PATEL
10	CLEAN PLASMA CUTTING PROCESS	P.N.BOKA
11	AUTOMATIC SEED SOWING MACHINE	N.T.RAVAL
12	DESIGN AND DEVELOPMENT OF PLANT IRRIGATION WATER SPRINKLER	P.N.BOKA
13	DEVELOPMENT OF ACCELEROMETER DRIVEN SMART POWER WHEEL CHAIR	N.A.PATEL
14	MECHANICAL SPRAYER	A.K.PATEL
15	DESIGN AND DEVELOPMENT OF REMOTE CONTROLLED, BATTERY OPERATED FORKLIFT	A.R.CHAUDHARY
16	FINITE ELEMENT ANALYSIS OF HORIZONTAL PRESSURE VESSEL WITH DISHED ENDS	N.T.RAVAL

First, second and third ranks have been identified in Project exhibition PROJECT FAIR 2017-18.

Fig 2.2.3.3 Project exhibition at PROJECT FAIR 2017-18

2.2.4 Initiatives related to industry interaction (15)

- Department has entered in to a MoU with various industries and organizations for the benefit of the mechanical engineering students and have active industrial interaction. Following are the details for MoU:

Table 2.2.4.1 Details of MoU signed by the Department

Sr. No.	Name of Institute/ Company/ Organisation	MoU Details	Expected Outcome of MoU	Investment (In Lakhs)
1	Gujarat Council on Science and Technology, DST, Government of Gujarat	Development of Design Lab at Institute campus	Exposer to advanced instruments, Project work	25
2	The Centre for Entrepreneurship Development, Ahmedabad	Business counseling	Guidance and training for Entrepreneurship Development	-
3	Aditya Hydrogen, Palanpur	Project work related to hydrogen multi fuel injection system	Project work	-

4	Khodiyar Cad Center, Mehsana	CAD software exposer	Project work Hand on training of CAD software	-
5	Vasant Fabricator, Chhapi	Industrial Visit, Training And Project Guidance	Industrial Exposer	-

- Special lectures by experts from industries are conducted for exposing students to understand the latest industrial needs. The details of the same are provided in Table. 2.2.4.2

Table 2.2.4.2 Details of Expert lecture and workshop by industry persons

Sr. No.	Name of Industry	Expert Name	Interaction purpose	Action Taken
1	R.D.Creation	Mr. Jigar Joshi	Prevention against Hacking and Cyber-attack in present scenario	Workshop
2	Dynamic Consultancy, Ahmedabad	Shri R N Padya,	Energy Efficiency technologies, Climate Change and Renewable energy technology	Workshop
3	Technosparc Engenderers Pvt. Ltd.	Mr. Jignesh Patel and Mr. Bhavya Patel	Welding Technology	Expert lecture
4	Sofcone India Pvt. Ltd.	Mr. Mrityunjaykumar	HVAC Designing	Expert lecture
5	Sofcone India Pvt. Ltd.	Mr. Mrityunjaykumar	Industrial Automation with PLC	Expert lecture
6	Khodiyar CAD center	Nimesh Patel	Fusion 360	Expert lecture

Fig 2.2.4.1 Expert Lecture on Welding Technology

Fig 2.2.4.2 Expert Lecture on HVAC Designing

- In house training programs are conducted to impart knowledge of CAD software, Entrepreneurship Development and professional skill development. The details of the same are provided in Table. 2.2.4.3.

Table 2.2.4.3 Details of in house training by industry persons

Sr.No.	Name of training	Industry providing training	Start Date	End Date	Number of students
1	Solid Works online training	Sai CAD center	25/05/2020	29/05/2020	98
2	E D P – Module II General	EDC cell	09/04/2019	15/04/2019	25
3	Finishing School Program First Phase of 25 hours	KCG, GoG	28/8/17	1/09/17	28
4	Finishing School Program second Phase of 25 hours	KCG, GoG	18/9/17	22/9/17	11
5	Finishing School Program First Phase of 25 hours Batch 09	KCG, GoG	28/05/2018	2/06/2018	39
6	Finishing School Program First Phase of 25 hours Batch 12	KCG, GoG	2/07/2018	7/07/2018	36
7	Finishing School Program second Phase of 25 hours	KCG, GoG	8/10/2018	12/10/2018	36
8	Finishing School Program First Phase of 20 hours Batch 14	KCG, GoG	9/12/2019	13/12/2019	58
9	Finishing School Program First Phase of 20 hours Batch 19	KCG, GoG	15/12/2020	24/12/2020	55
10	Finishing School Program Second Phase of 20 hours Batch 19	KCG, GoG	10/05/2021	20/05/2021	39

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

- During mentoring sessions, students are motivated to undergo internship in various industries in the area of their interest. Internship helps the students to get exposed to industrial environment and to bridge the gap between industry and academic institution. Many students of the department undergo summer/winter internship in industries and during the internship they may also scout the industrial problem which they can take up as their final year project. Students identify the organizations, suitable to approach to allow

our students for internship/ summer training

- Faculty members also help the students to arrange internships for the students in the area of their interest.
- List of industries/organizations where our students have taken internship/training is given below.

SR.NO.	NAME OF INDUSTRY	ENROLLEMENT NUMBER	STUDENT NAME
1	Royal caster product ltd	140610119022	Mevada Ravi Hashmukhbhai
2	Amrit Engineering pvt Ltd	140610119012	Sathvara Devang
		140610119056	Dharava Ketul
3	Gujarat Apollo Industries Ltd	140610119042	Patel Rajat M
		140610119026	Oza Virat
		140610119054	Rathod Abhisheksingh
		140610119053	Ratod Tejas H
		140610119009	Chauhan Rajdipsinh
4	Banas Dairy	140610119062	Thaker Vedant H
		140610119006	Chaudhary Ishvarbhai
		140610119016	Gohil Chirak K
		140610119015	Gohil Chetan K
		140610119017	Goriya Raihan
		140610119050	Prajapati Vijay
		140610119030	Parmar Rahul J
		140610119039	Patel Khush P
		140610119040	Patel Mharshi R
		140610119041	Patel Mitesh M
		140610119046	Prajapati Bhavik V
		140613119003	Limbachiya Jimit R
		110610119046	Amin Akash R
		140613119001	Chelani Kuldip
		140613119005	Nai Nitin
		140610119011	Christian Manan
		140610119023	Modh Ajay
		140610119031	Patni Rahul

		140610119032	Patel Apurva
		140610119034	Patel Biren
		140610119037	Patel Darshan
		140610119048	Prajapati Pradip
		140610119052	Rana Ranjit
5	Captain Pumps Pvt.Ltd. Palanpur	140610119019	Joshi Harsh
		140610119002	Badarpura Mohammad
		140610119003	Badi Sirajudin
		140610119027	Padhiyar Prakash
		140610119043	Patel Raj p
		140610119049	Prajapati Satyam P
		140610119055	Rathwa Vijay
		140610119059	Suthar Bharat
		140610119044	Patel Rinal A
6	Gujarat Apollo Industries Ltd	140610119013	Gajjar Vikas D
		140610119033	Patel Ashish P
		140610119036	Patel Darshan g
		140610119047	Prajapati Jheel S
7	IOCL, Vadodara	140610119055	Rathwa Vijay
8	Windsor Machines Ltd	150613119006	Patel Dhruv
		150613119007	Patel Maharshi
		150613119008	Patel Raj
		150613119012	Sathvara Keyur
		140610119062	Thaker Vedant H
9	Captain Pumps Pvt.Ltd. Palanpur	150610119021	Gehlot Jitendrakumar M.
		150610119007	Chaudhari Devaraj D.
10	Gokul Refoils and Solvent Limited, Sidhpur	150610119055	Bhavesh Rajput
		150610119053	Suresh Prajapati
		150610119048	Piraiya Hiren
11	Banas Dairy Palanpur	150610119055	Bhavesh Rajput
		150610119053	Suresh Prajapati
		150610119048	Piraiya Hiren
12	B M Engineering, Ahmedabad	150610119035	Parmar Himansu

13	Prima Automation, Ahmedabad	150610119024	Lachhwani Jay
		150610119019	Galsar Raj
14	Banas Dairy Palanpur	150610119025	Limbachiya Parth
		150610119033	Parikh Susmit
		150610119051	Prajapati Harshil
15	ONGC, Ankleswar	150610119047	Pathan Faisalkhan
16	Keepsake Engineering Consultancy Pvt Ltd Ahmedabad	150610119014	Das Kislay
		150610119039	Patel Dhruvil
		150610119043	Patel Poojan
		150610119047	Pathan Faisalkhan
17	Riya Hundai Palanpur	160610119021	Meman Mo.soban
18	Banas Dairy Palanpur	160610119027	Panchal Jay
		160610119040	Prajapati Paresh
		160610119044	Prajapati Satish
		160610119049	Rajput Sanjaysinh
		160610119052	Saripadya Dipak
19	Grasim Industries Limited Bharuch	170610119002	Bharti Abhishek
		170610119003	Rupeshkumar

- List of industries/organizations where our students regularly sent for visit/training are given below.

- Captain Pumps Pvt.Ltd. Palanpur
- Gokul Refoils and Solvent Limited, Sidhpur
- Banas Dairy Palanpur
- B M Engineering, Ahmedabad
- ONGC, Ankleswar
- Keepsake Engineering Consultancy Pvt Ltd Ahmedabad
- Riya Hundai Palanpur
- Grasim Industries Limited
- Vasant Fabricators PVT Limited, Chhapi
- Wanakbori Thermal Power Station, Wanakbori
- Costal Gujarat Power Limited, TATA Power, Kutch, Gujarat
- College of Renewable Energy and Environmental Engineering, SK Nagar, Dantivada
- Riya Hyundai, Palanpur
- COE, Government Engineering College, Patan
- AutoresQ, Palanpur

CRITERION 3	Course Outcomes and Program Outcomes	120

3. COURSE OUTCOMES AND PROGRAM OUTCOMES (120)

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

Program outcomes for B. E. Mechanical Engineering Program

Engineering Graduates will be able to:

PO1 Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2 Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3 Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4 Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5 Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6 The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7 Environment and Sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8 Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9 Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10 Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11 Project Management 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.

PO12 Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcome (PSO) for B.E. Mechanical Engineering Program:

PSO1: To apply knowledge and skill of Mechanical Engineering to Solve Real life Problems to meet the need of Society.

PSO2: To able to pursue his career as Professional Mechanical Engineer.

Above mention POs and PSOs are achieved by offering following courses to the students of Bachelor of Mechanical Engineering. The courses are offered in various categories like Humanities and Social Sciences, Basic Science, Engineering Science, and Professional core. Professional Elective courses and Open Elective courses are also offered to Mechanical engineering students to engage them in interdisciplinary project work.

Courses included in the Mechanical Engineering Program:

Table 3.1.1 List of Courses - AY: 2020-21 (CAY)

Course code	GTU Course Code	Course Name
	SEM 1	
C103N	3110004	Basic Civil Engineering
C106N	3110007	Environmental Sciences
C107N	3110011	Physics
C109N	3110013	Engineering Graphics & Design
C110N	3110014	Mathematics – I
C112N	3110017	Induction Program
	SEM 2	
C101N	3110002	English
C102N	3110003	Programming for Problem Solving
C104N	3110005	Basic Electrical Engineering
C105N	3110006	Basic Mechanical Engineering
C108N	3110012	Workshop/Manufacturing Practices
C111N	3110015	Mathematics – II
	SEM 3	
C203N	3130008	Design Engineering I A
C205N	3131904	Material Science and Metallurgy
C206N	3131905	Engineering Thermodynamics
C207N	3131906	Kinematics and Theory of Machine
C208N	3130005	Complex Variables and Partial Differential Equations
C209N	3130004	Effective Technical Communication

SEM 4		
C211N	3140005	Design Engineering I B
C213N	3141901	Mechanical Measurement and Metrology
C215N	3141906	Fluid Mechanics and Hydraulics Machines
C216N	3141907	Fundamentals of Machine Design
C217N	3141908	Manufacturing Processes
C218N	3141909	Organisational Behaviour
SEM 5		
C301N	3150001	Design Engineering - II A
C303N	3150005	Integrated Personality Development Course
C304N	3151909	Heat Transfer
C305N	3151910	Operation Research
C306N	3151911	Dynamics of Machinery
C307N	3151912	Manufacturing Technology
C308N	3151913	Oil Hydraulics And Pneumatics (Open Elective-1)
SEM 6		
C311N	3160001	Design Engineering II B
C313N	3160003	Integrated Personality Development Course
C314N	3161910	Applied Thermodynamics
C315N	3161903	Computer Aided Design
C316N	3161907	Basics of Industrial Engineering
C317N	3161914	Renewable Energy Engineering
C318N	3161917	Computer Aided Manufacturing
C319N	3161920	Automobile Engineering
C320N	3161922	Advanced Manufacturing Processes
C321N	3161926	Industry 4.0
SEM 7		
C401	2170001	Project
C403	2171901	Operation Research
C404	2171903	Computer Aided Manufacturing
C405	2171909	Machine Design
C406	2171910	Power Plant Engineering
C407	2171912	Oil Hydraulics and Pneumatics (Dept. Elec.-I)
SEM 8		
C411	2181909	Project II
C412	2181910	Renewable Energy Engineering
C413	2181915	Automobile Engineering (Dept. Elec. - II)

Table 3.1.2 List of Courses - AY: 2019-20 (CAY*m1*)

Course code	GTU Course Code	Course Name
SEM 1		
C103N	3110004	Basic Civil Engineering
C106N	3110007	Environmental Sciences
C107N	3110011	Physics
C109N	3110013	Engineering Graphics & Design
C110N	3110014	Mathematics – I
C112N	3110017	Induction Program
SEM 2		
C101N	3110002	English
C102N	3110003	Programming for Problem Solving
C104N	3110005	Basic Electrical Engineering
C105N	3110006	Basic Mechanical Engineering
C108N	3110012	Workshop/Manufacturing Practices
C111N	3110015	Mathematics – II
SEM 3		
C203N	3130008	Design Engineering I A
C205N	3131904	Material Science and Metallurgy
C206N	3131905	Engineering Thermodynamics
C207N	3131906	Kinematics and Theory of Machine
C208N	3130005	Complex Variables and Partial Differential Equations
C209N	3130004	Effective Technical Communication
SEM 4		
C211N	3140005	Design Engineering I B
C213N	3141901	Mechanical Measurement and Metrology
C215N	3141906	Fluid Mechanics and Hydraulics Machines
C216N	3141907	Fundamentals of Machine Design
C217N	3141908	Manufacturing Processes
C218N	3141909	Organisational Behavior
SEM 5		
C301	2150001	Design Engineering - II A
C302	2150002	Cyber Security (Inst. Elec.)
C303	2151902	Theory of Machines
C304	2151903	Fluid Power Engineering
C305	2151907	Design of Machine Elements
C306	2151908	Control Engineering
C307	2151909	Heat Transfer
SEM 6		
C311	2160001	Design Engineering - II B
C312	2161901	Dynamics of Machinery
C313	2161902	Internal Combustion Engines
C314	2161903	Computer Aided Design
C315	2161907	Industrial Engineering
C316	2161908	Refrigeration and Air Conditioning

C317	2161909	Production Technology
SEM 7		
C401	2170001	Project
C403	2171901	Operation Research
C404	2171903	Computer Aided Manufacturing
C405	2171909	Machine Design
C406	2171910	Power Plant Engineering
C407	2171912	Oil Hydraulics and Pneumatics (Dept. Elec.-I)
SEM 8		
C411	2181909	Project II
C412	2181910	Renewable Energy Engineering
C413	2181915	Automobile Engineering (Dept Elec - II)

Table 3.1.3 List of Courses - AY: 2018-19 (CAY*m2*)

Course code	GTU Course Code	Course Name
SEM 1		
C103N	3110004	Basic Civil Engineering
C106N	3110007	Environmental Sciences
C107N	3110011	Physics
C109N	3110013	Engineering Graphics & Design
C110N	3110014	Mathematics – I
C112N	3110017	Induction Program
SEM 2		
C101N	3110002	English
C102N	3110003	Programming for Problem Solving
C104N	3110005	Basic Electrical Engineering
C105N	3110006	Basic Mechanical Engineering
C108N	3110012	Workshop/Manufacturing Practices
C111N	3110015	Mathematics – II
SEM 3		
C201	2130002	Advanced Engineering Mathematics
C202	2130003	Mechanics of Solids
C203	2130005	Design Engineering – I A
C204	2131903	Manufacturing Processes – I
C205	2131904	Material Science and Metallurgy
C206	2131905	Engineering Thermodynamics
C207	2131906	Kinematics of Machines
SEM 4		
C211	2140002	Design Engineering - I B
C212	2140003	Engineering Economics and Management
C213	2141901	Mechanical Measurement and Metrology
C214	2141905	Complex Variables and Numerical Methods
C215	2141906	Fluid Mechanics
C216	2141907	Machine Design and Industrial Drafting
C217	2141908	Manufacturing Processes - II

SEM 5		
C301	2150001	Design Engineering - II A
C302	2150002	Cyber Security (Inst. Elec.)
C303	2151902	Theory of Machines
C304	2151903	Fluid Power Engineering
C305	2151907	Design of Machine Elements
C306	2151908	Control Engineering
C307	2151909	Heat Transfer
SEM 6		
C311	2160001	Design Engineering - II B
C312	2161901	Dynamics of Machinery
C313	2161902	Internal Combustion Engines
C314	2161903	Computer Aided Design
C315	2161907	Industrial Engineering
C316	2161908	Refrigeration and Air Conditioning
C317	2161909	Production Technology
SEM 7		
C401	2170001	Project
C403	2171901	Operation Research
C404	2171903	Computer Aided Manufacturing
C405	2171909	Machine Design
C406	2171910	Power Plant Engineering
C407	2171912	Oil Hydraulics and Pneumatics (Dept. Elec.-I)
SEM 8		
C411	2181909	Project II
C412	2181910	Renewable Energy Engineering
C413	2181915	Automobile Engineering (Dept Elec - II)

3.1.1. Course Outcomes (COs) (05)

Table 3.1.1.1 Course Name: Engineering Thermodynamics (C206)
Academic Year 2018-19 (CAY*m2*)

COs	Statement
C206.1	Explain thermodynamic terminologies and basic concepts.
C206.2	Interpret laws of thermodynamics and its applications.
C206.3	Design and develop different thermodynamic systems.
C206.4	Analyze the performance of vapor and gas power cycles.
C206.5	Apply knowledge of thermodynamics and its impact on environmental concerns.

Table 3.1.1.2 Course Name: Fluid mechanics (C215)
Academic Year 2018-19 (CAY*m2*)

COs	Statement
C215.1	Understand the basic concept of fluid mechanics
C215.2	Formulate and Analyze problems related to fluid statics
C215.3	Make use of dimensional analysis and interpret types of fluid flow
C215.4	Analyze flow of fluid through pipes
C215.5	Understand basics of compressible flow Understand basics of compressible flow

Table 3.1.1.3 Course Name: Theory of Machine (C303)
Academic Year 2018-19 (CAY*m2*)

COs	Statement
C303.1	Analyse effect of gyroscopic couple on vehicles, ships and aeroplanes
C303.2	Design flywheels for IC engines and punching press
C303.3	Apply fundamentals of dynamics analysis to various mechanical systems
C303.4	Design and analyse clutches and brakes
C303.5	Perform power measurement using dynamometers

Table 3.1.1.4 Course Name: Refrigeration and Air-Conditioning (C316)
Academic Year 2018-19 (CAY*m2*)

COs	Statement
C316.1	Understand the basic concepts of refrigeration and air conditioning systems
C316.2	Understand and analysis of various refrigeration cycles
C316.3	Make basic calculation of psychometric properties and process
C316.4	Do basic calculations of heating and cooling load requirements of a room
C316.5	Apply scientific and engineering principles to analyze and design aspects of engineering systems that relate to refrigeration and air conditioning

Table 3.1.1.5 Course Name: Machine Design (C405)
Academic Year 2018-19 (CAY*m2*)

COs	Statement
C405.1	Design gears of various types
C405.2	Design gearboxes for machine tools
C405.3	Design journal bearing and select antifriction bearing for state application
C405.4	Design IC engine components and crane parts

Table 3.1.1.6 Course Name: Renewable Energy Engineering (C412)
Academic Year 2018-19 (CAY*m2*)

Cos	Statement
C412.1	Demonstrate and Summarize Needs and present scenario of renewable energy, advantages and limitations also Estimate the economic factor of renewable energy sources.
C412.2	Utilize the solar power and Illustrate the equipments used to convert solar energy in to useful form.
C412.3	Estimate the wind power and Evaluate energy available from wind mill.
C412.4	Interpret the application and generation of Bio Energy, Ocean Energy and Geothermal energy.

3.1.2. CO-PO matrices of courses selected in 3.1.1 (05)

Table 3.1.2.1 Course Name: Engineering Thermodynamics (C206)
Academic Year 2018-19 (CAY*m2*)

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C206.1	3	3	3	3	2	1	-	-	-	-	-	3	3	1
C206.2	3	3	3	3	3	-	-	2	-	2	-	3	2	1
C206.3	3	3	3	3	3	3	3	1	3	2	2	2	3	3
C206.4	3	3	3	1	3	2	3	-	-	-	-	-	3	1
C206.5	3	3	3	2	2	3	3	-	-	-	1	2	3	2
C206	3.00	3.00	3.00	2.40	2.60	2.25	3.00	1.50	3.00	2.00	1.50	2.50	2.80	1.60

Table 3.1.2.2 Course Name: Fluid mechanics (C215)
Academic Year 2018-19 (CAY*m2*)

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C206.1	3	1	-	1	-	-	-	-	-	-	-	1	2	1
C206.2	3	2	1	1	-	-	-	-	-	1	-	1	2	1
C206.3	3	1	2	2	-	-	-	-	-	1	-	1	2	1
C206.4	3	2	1	1	1	-	-	-	-	1	-	1	2	1
C206.5	3	2	2	1	1	-	-	-	-	1	-	1	2	1
C206	3.00	1.60	1.50	1.20	1.00	0	0	0	0	1.00	0	1.00	2.00	1.00

Table 3.1.2.3 Course Name: Theory of Machine (C303)
Academic Year 2018-19 (CAY*m2*)

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C303.1	3	2	-	-	-	-	-	2	2	2	-	-	2	1
C303.2	3	3	3	2	-	2	-	-	-	-	-	2	3	1
C303.3	3	2	-	-	-	-	-	-	-	-	-	-	2	-
C303.4	3	3	3	2	-	2	-	-	-	-	-	-	3	-
C303.5	3	-	-	-	-	-	-	2	3	3	-	-	1	1
C206	3.00	2.50	3.00	2.00	0	2.00	-	2.00	2.50	2.50	0	2.00	2.20	1.00

Table 3.1.2.4 Course Name: Refrigeration and Air-Conditioning (C316)
Academic Year 2018-19 (CAY*m2*)

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C316.1	3	1	-	-	-	1	1	-	-	1	-	1	3	2
C316.2	3	3	1	-	-	1	3	-	-	1	-	2	3	2
C316.3	3	3	2	2	-	-	-	-	-	1	-	2	2	1
C316.4	3	-	2	2	-	-	-	-	-	1	-	1	1	1
C316.5	3	2	2	1	1	-	-	-	-	1	-	-	2	-
C316	3.00	2.25	1.75	1.67	1.00	1.00	2.00	0	0	1.00	0	1.50	2.20	1.50

Table 3.1.2.5 Course Name: Machine Design (C405)

Academic Year 2018-19 (CAY*m2*)

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C405.1	3	2	3	-	1	2	-	-	-	-	-	1	3	1
C405.2	3	2	3	-	1	2	-	-	-	-	-	1	3	1
C405.3	3	2	3	-	2	2	-	-	-	-	-	1	3	1
C405.4	3	2	3	-	-	2	-	-	1	2	-	1	3	2
C405	3.00	2.00	3.00	0	1.33	2.00	0	0	1.00	2.00	0	1.00	3.00	1.25

Table 3.1.2.6 Course Name: Renewable Energy Engineering (C412)

Academic Year 2018-19 (CAY*m2*)

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C412.1	1	-	-	-	-	2	2	-	1	1	1	1	2	3
C412.2	3	3	3	3	2	3	3	1	2	-	3	2	3	3
C412.3	3	2	2	2	2	2	2	1	2	-	1	2	3	3
C412.4	1	1	1	1	-	1	1	-	-	-	-	1	3	2
C206	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.67	1.00	1.67	1.50	2.75	2.75

3.1.3. Program level Course Outcome – PO and PSO matrix of all courses including first year courses (10)

Table 3.1.3.1 CO-PO and PSO Mapping Matrix for Academic Year **2020-21 (CAY)**

A.Y. 2020-21														
Course code	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
Semester 1														
C103N	3.00	3.00	-	-	-	2.75	-	-	3.00	-	-	2.00	2.00	1.00
C106N	2.00	2.00	3.00	-	3.00	2.00	2.25	-	2.00	-	-	-	1.33	1.25
C107N	2.00	1.00	1.00	-	1.00	-	1.00	-	-	-	-	1.00	1.40	1.60
C109N	3.00	2.00	3.00	-	3.00	2.25	-	-	-	2.00	-	1.00	2.20	1.00
C110N	3.00	3.00	2.60	-	-	-	-	-	-	-	-	-	2.00	-
C112N	-	-	-	-	-	2.00	-	3.00	1.00	2.00	-	1.00	1.00	2.00
Semester 2														
C101N	-	-	-	-	-	-	-	-	-	2.00	0.00	1.00	-	1.00
C102N	2.60	2.20	2.67	2.00	-	-	-	1.50	1.75	2.00	-	2.00	2.00	1.25
C104N	2.50	2.00	1.50	1.50	1.00	-	-	-	-	-	-	-	1.75	-
C105N	3.00	1.40	-	-	-	-	-	1.00	1.00	1.60	-	-	2.00	1.00
C108N	1.40	1.33	1.67	-	1.33	1.00	1.00	1.00	-	-	-	1.00	2.00	2.00
C111N	3.00	3.00	2.40	-	-	-	-	-	-	-	1.00	1.00	2.00	1.00
Semester 3														
C203N	3.00	3.00	2.65	2.80	2.25	2.00	2.00	2.00	2.40	2.00	2.00	2.60	3.00	2.60
C205N	2.50	1.75	1.75	1.50	2.00	1.50	1.33	1.00	1.00	1.25	1.00	1.25	2.50	2.25
C206N	3.00	3.00	3.00	2.40	2.60	2.25	3.00	1.50	3.00	2.00	1.50	2.50	2.80	1.60
C207N	3.00	1.75	-	-	2.00	2.00	-	-	1.00	-	-	2.00	2.00	1.00
C208N	3.00	2.80	2.20	2.60	-	-	-	-	-	-	1.00	1.00	2.00	1.00
C209N	-	-	-	-	-	-	-	3.00	1.67	2.67	-	2.00	-	1.40
Semester 4														
C211N	3.00	3.00	2.60	2.80	2.25	2.00	2.00	2.00	2.40	2.00	2.00	2.60	3.00	2.60
C213N	2.25	1.67	-	-	2.50	1.50	1.67	1.00	1.33	2.00	1.00	2.00	2.25	2.00
C215N	3.00	2.20	2.00	1.60	1.33	-	-	-	-	1.00	-	1.00	2.00	1.00
C216N	3.00	2.40	2.67	3.00	2.00	2.67	-	2.00	2.00	1.00	-	1.33	2.60	1.00
C217N	3.00	1.75	1.67	1.00	2.67	1.67	1.33	-	2.50	2.00	1.25	1.67	2.75	2.00
C218N	-	-	-	-	-	2.50	2.00	2.50	2.25	2.50	2.50	3.00	1.00	3.00
Semester 5														
C301N	2.40	2.33	2.50	2.75	2.80	2.60	2.40	2.00	3.00	2.40	2.80	2.60	2.60	3.00
C303N	-	-	-	-	-	1.60	2.00	2.25	2.20	2.00	1.75	2.33	1.60	2.00
C304N	3.00	2.00	2.00	2.00	1.00	-	-	-	-	1.00	-	-	2.00	-
C305N	3.00	2.40	2.00	2.75	-	1.60	-	1.75	2.00	1.25	3.00	3.00	3.00	2.00
C306N	3.00	2.00	2.00	-	-	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	-
C307N	3.00	2.40	2.20	2.00	2.25	2.00	1.33	1.00	2.00	2.00	1.50	2.60	2.60	2.00
C308N	1.50	1.70	1.70	1.50	2.00	1.00	-	-	1.00	1.00	-	1.00	2.00	-
Semester 6														
C311N	2.40	2.33	2.50	2.75	2.80	2.60	2.40	2.00	3.00	2.40	2.80	2.60	2.60	3.00
C313N	0.00	0.00	0.00	0.00	0.00	0.80	0.00	2.00	2.00	1.20	1.20	2.00	2.00	0.00
C314N	3.00	2.40	2.80	2.00	1.00	2.60	3.00	1.00	1.67	2.00	1.00	2.20	3.00	2.20
C315N	2.60	2.50	2.00	2.67	2.20	2.00	1.00	1.00	1.33	1.75	2.00	2.00	2.20	1.80

C316N	3.00	3.00	2.80	2.80	2.60	2.80	2.60	2.80	2.80	2.60	2.80	2.80	3.00	3.00
C317N	2.20	2.25	2.25	2.25	2.00	2.00	2.00	1.00	1.75	1.00	2.00	1.60	2.80	2.80
C318N	2.40	1.80	2.75	2.50	1.80	1.80	1.00	1.00	1.60	1.25	1.80	1.50	3.00	2.40
C319N	2.80	2.50	2.67	2.00	2.00	-	-	-	2.00	3.00	-	1.00	2.20	1.33
C320N	3.00	2.40	2.00	2.00	-	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.50	2.50
C321N	3.00	3.00	3.00	3.00	2.75	3.00	2.75	2.75	2.25	2.25	2.75	2.75	3.00	3.00
Semester 7														
C401	3.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.50	2.00	2.50	2.00	1.60	2.00
C403	3.00	2.40	2.00	2.75	-	1.60	-	1.75	2.00	1.25	3.00	3.00	3.00	2.00
C404	2.00	1.60	2.25	2.33	1.60	1.60	1.00	1.00	1.50	1.25	1.60	1.33	3.00	2.25
C405	3.00	2.00	3.00	-	1.33	2.00	-	-	1.00	2.00	-	1.00	3.00	1.25
C406	3.00	2.75	3.00	-	-	-	1.00	-	-	1.00	-	1.00	2.00	1.25
C407	3.00	1.50	2.20	2.33	1.50	1.67	2.00	1.00	2.00	1.67	1.67	1.40	2.40	1.80
Semester 8														
C411	2.50	2.50	2.33	2.50	1.50	2.00	2.00	1.67	2.33	2.00	2.33	2.00	2.25	1.50
C412	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.67	1.00	1.67	1.50	2.75	2.75
C413	3.00	3.00	3.00	1.67	2.00	1.00	-	-	2.00	3.00	-	1.00	2.25	1.25

Table 3.1.3.2 CO-PO and PSO Mapping Matrix for Academic Year **2019-20 (CAY*m1*)**

Course code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Semester 1														
C103N	3.00	3.00	-	-	-	2.75	-	-	3.00	-	-	2.00	2.00	1.00
C106N	2.00	1.50	-	-	-	2.75	2.75	1.50	-	2.00	-	2.00	2.50	1.50
C107N	2.00	1.00	1.00	-	1.00	-	1.00	-	-	-	-	1.00	1.40	1.60
C109N	3.00	2.00	3.00	-	3.00	2.25	-	-	-	2.00	-	1.00	2.20	1.00
C110N	3.00	3.00	2.60	-	-	-	-	-	-	-	-	-	2.00	-
C112N	-	-	-	-	-	2.00	-	3.00	1.00	2.00	-	1.00	1.00	2.00
Semester 2														
C101N	-	-	-	-	-	-	-	-	-	2.00	0.00	1.00	-	1.00
C102N	2.60	2.20	2.67	2.00	-	-	-	1.50	1.75	2.00	-	2.00	2.00	1.25
C104N	2.50	2.00	1.50	1.50	1.00	-	-	-	-	-	-	-	1.75	-
C105N	3.00	1.40	-	-	-	-	-	1.00	1.00	1.60	-	-	2.00	1.00
C108N	1.40	1.33	1.67	-	1.33	1.00	1.00	1.00	-	-	-	1.00	2.00	2.00
C111N	3.00	3.00	2.40	-	-	-	-	-	-	-	1.00	1.00	2.00	1.00
Semester 3														
C203N	3.00	3.00	2.65	2.80	2.25	2.00	2.00	2.00	2.40	2.00	2.00	2.60	3.00	2.60
C205N	2.50	1.75	1.75	1.50	2.00	1.50	1.33	1.00	1.00	1.25	1.00	1.25	2.50	2.25
C206N	3.00	3.00	3.00	2.40	2.60	2.25	3.00	1.50	3.00	2.00	1.50	2.50	2.80	1.60
C207N	3.00	1.75	-	-	2.00	2.00	-	-	1.00	-	-	2.00	2.00	1.00
C208N	3.00	2.80	2.20	2.60	-	-	-	-	-	-	1.00	1.00	2.00	1.00
C209N	-	-	-	-	-	-	-	3.00	1.67	2.67	-	2.00	-	1.40
Semester 4														
C211N	3.00	3.00	2.60	2.80	2.25	2.00	2.00	2.00	2.40	2.00	2.00	2.60	3.00	2.60
C213N	2.25	1.67	-	-	2.50	1.50	1.67	1.00	1.33	2.00	1.00	2.00	2.25	2.00
C215N	3.00	2.20	2.00	1.60	1.33	-	-	-	-	1.00	-	1.00	2.00	1.00
C216N	3.00	2.40	2.67	3.00	2.00	2.67	-	2.00	2.00	1.00	-	1.33	2.60	1.00
C217N	3.00	1.75	1.67	1.00	2.67	1.67	1.33	-	2.50	2.00	1.25	1.67	2.75	2.00
C218N	-	-	-	-	-	2.50	2.00	2.50	2.25	2.50	2.50	3.00	1.00	3.00
Semester 5														
C301	2.40	2.33	2.50	2.75	2.80	2.60	2.40	2.00	3.00	2.40	2.80	2.60	2.60	3.00
C302	2.00	2.00	1.50	1.67	1.50	1.40	-	2.40	1.00	-	-	1.00	2.60	1.50
C303	3.00	2.50	3.00	2.00	-	2.00	-	2.00	2.50	2.50	-	2.00	2.20	1.00
C304	1.75	2.25	1.75	1.33	1.33	-	1.00	-	1.00	1.00	-	1.00	2.00	1.75
C305	2.80	2.80	2.40	2.75	2.50	2.00	2.00	1.50	2.20	2.00	1.00	2.60	2.20	2.40
C306	3.00	1.25	3.00	3.00	1.67	2.00	1.00	-	-	2.00	2.00	1.00	2.25	2.00
C307	3.00	2.20	1.80	1.75	1.00	-	-	-	-	1.00	-	-	2.00	-

Semester 6														
C311	2.40	2.33	2.50	2.75	2.80	2.60	2.40	2.00	3.00	2.40	2.80	2.60	2.60	3.00
C312	3.00	2.75	2.00	2.00	1.75	1.50	2.00	1.00	1.50	1.50	1.00	2.25	2.50	2.00
C313	3.00	3.00	2.75	2.25	2.00	2.00	2.50	1.00	2.00	2.00	-	2.00	3.00	2.00
C314	2.00	2.00	1.67	2.50	2.33	1.67	1.33	1.50	2.00	2.50	2.00	2.00	2.50	2.25
C315	2.80	2.75	2.60	2.75	2.50	2.60	2.50	2.50	3.00	2.40	2.25	3.00	2.80	2.60
C316	3.00	2.25	1.75	1.67	1.00	1.00	2.00	-	-	1.00	-	1.50	2.20	1.50
C317	2.60	2.00	2.80	1.80	1.60	2.00	1.33	1.00	1.50	1.50	1.75	1.60	2.80	2.40
Semester 7														
C401	3.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.50	2.00	2.50	2.00	1.60	2.00
C403	3.00	2.40	2.00	2.75	-	1.60	-	1.75	2.00	1.25	3.00	3.00	3.00	2.00
C404	2.00	1.60	2.25	2.33	1.60	1.60	1.00	1.00	1.50	1.25	1.60	1.33	3.00	2.25
C405	3.00	2.00	3.00	-	1.33	2.00	-	-	1.00	2.00	-	1.00	3.00	1.25
C406	3.00	2.75	3.00	-	-	-	1.00	-	-	1.00	-	1.00	2.00	1.25
C407	3.00	1.50	2.20	2.33	1.50	1.67	2.00	1.00	2.00	1.67	1.67	1.40	2.40	1.80
Semester 8														
C411	2.50	2.50	2.33	2.50	1.50	2.00	2.00	1.67	2.33	2.00	2.33	2.00	2.25	1.50
C412	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.67	1.00	1.67	1.50	2.75	2.75
C413	3.00	3.00	3.00	1.67	2.00	1.00	-	-	2.00	3.00	-	1.00	2.25	1.25

Table 3.1.3.3 CO-PO and PSO Mapping Matrix for Academic Year **2018-19 (CAY*m2*)**

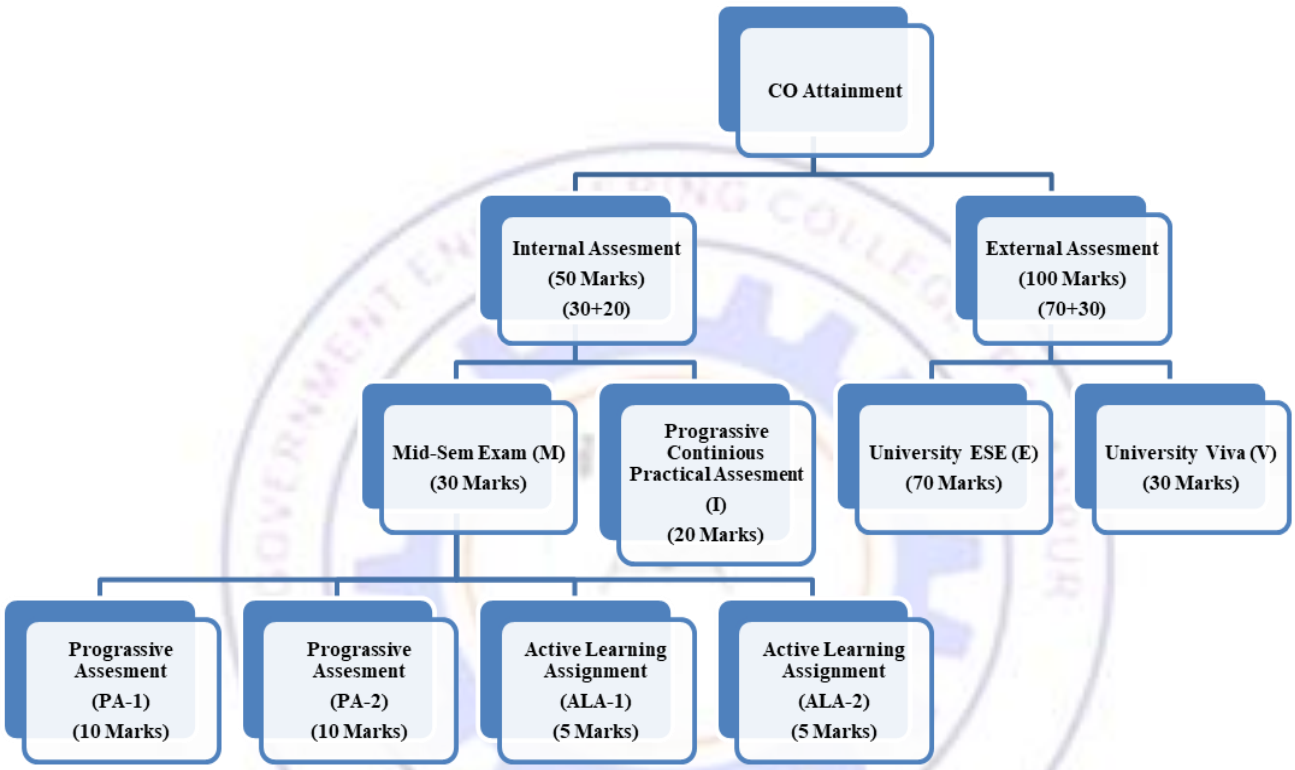
Course code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Semester 1														
C103N	3.00	3.00	-	-	-	2.75	-	-	3.00	-	-	2.00	2.00	1.00
C106N	2.00	1.50	-	-	-	2.75	2.75	1.50	-	2.00	-	2.00	2.50	1.50
C107N	2.00	1.00	1.00	-	1.00	-	1.00	-	-	-	-	1.00	1.40	1.60
C109N	3.00	2.00	3.00	-	3.00	2.25	-	-	-	2.00	-	1.00	2.20	1.00
C110N	3.00	3.00	2.60	-	-	-	-	-	-	-	-	-	2.00	-
C112N	-	-	-	-	-	2.00	-	3.00	1.00	2.00	-	1.00	1.00	2.00
Semester 2														
C101N	-	-	-	-	-	-	-	-	-	2.00	-	1.00	-	1.00
C102N	2.60	2.20	2.67	2.00	-	-	-	1.50	1.75	2.00	-	2.00	2.00	1.25
C104N	2.50	2.00	1.50	1.50	1.00	-	-	-	-	-	-	-	1.75	-
C105N	3.00	1.40	-	-	-	-	-	1.00	1.00	1.60	-	-	2.00	1.00
C108N	1.40	1.33	1.67	-	1.33	1.00	1.00	1.00	-	-	-	1.00	2.00	2.00
C111N	3.00	3.00	2.40	-	-	-	-	-	-	-	1.00	1.00	2.00	1.00
Semester 3														
C201	3.00	3.00	2.60	-	-	-	-	-	-	-	-	-	2.00	-
C202	3.00	3.00	-	2.00	2.00	-	-	2.00	2.00	2.00	-	2.00	2.00	2.00
C203	3.00	3.00	2.60	2.80	2.25	2.00	2.00	2.00	2.40	2.00	2.00	2.60	3.00	2.60
C204	3.00	3.00	3.00	3.00	2.25	2.00	2.00	2.00	2.50	2.00	2.00	3.00	3.00	2.75
C205	2.60	2.60	2.20	1.60	2.33	2.00	2.50	1.75	1.80	1.75	2.50	2.00	2.80	2.80
C206	3.00	3.00	3.00	2.40	2.60	2.25	3.00	1.50	3.00	2.00	1.50	2.50	2.80	1.60
C207	3.00	2.50	3.00	2.00	3.00	2.00	-	-	2.00	-	-	2.00	2.25	1.00
Semester 4														
C211	3.00	3.00	2.60	2.80	2.25	2.00	2.00	2.00	2.40	2.00	2.00	2.60	3.00	2.60
C212	3.00	2.00	-	-	2.00	2.50	-	2.00	2.00	2.00	2.00	2.00	3.00	2.00
C213	3.00	2.80	2.40	2.00	2.25	2.00	2.20	1.75	2.00	2.00	2.33	2.20	2.80	2.80
C214	2.80	2.60	2.40	1.80	1.00	-	-	-	-	-	-	2.00	2.00	1.00
C215	3.00	1.60	1.50	1.20	1.00	-	-	-	-	1.00	-	1.00	2.00	1.00
C216	3.00	2.50	3.00	2.00	3.00	-	1.00	2.50	2.00	1.00	-	2.00	2.00	1.50
C217	3.00	2.75	2.25	2.33	2.25	2.00	1.50	1.00	2.00	2.50	1.67	2.75	2.75	2.00
Semester 5														
C301	2.40	2.33	2.50	2.75	2.80	2.60	2.40	2.00	3.00	2.40	2.80	2.60	2.60	3.00
C302	2.00	2.00	1.50	1.67	1.50	1.40	-	2.40	1.00	-	-	1.00	2.60	1.50
C303	3.00	2.50	3.00	2.00	-	2.00	-	2.00	2.50	2.50	-	2.00	2.20	1.00
C304	1.75	2.25	1.75	1.33	1.33	-	1.00	-	1.00	1.00	-	1.00	2.00	1.75
C305	2.80	2.80	2.40	2.75	2.50	2.00	2.00	1.50	2.20	2.00	1.00	2.60	2.20	2.40
C306	3.00	1.25	3.00	3.00	1.67	2.00	1.00	-	-	2.00	2.00	1.00	2.25	2.00
C307	3.00	2.20	1.80	1.75	1.00	-	-	-	-	1.00	-	-	2.00	-

Semester 6														
C311	2.40	2.33	2.50	2.75	2.80	2.60	2.40	2.00	3.00	2.40	2.80	2.60	2.60	3.00
C312	3.00	2.75	2.00	2.00	1.75	1.50	2.00	1.00	1.50	1.50	1.00	2.25	2.50	2.00
C313	3.00	3.00	2.75	2.25	2.00	2.00	2.50	1.00	2.00	2.00	-	2.00	3.00	2.00
C314	2.00	2.00	1.67	2.50	2.33	1.67	1.33	1.50	2.00	2.50	2.00	2.00	2.50	2.25
C315	2.80	2.75	2.60	2.75	2.50	2.60	2.50	2.50	3.00	2.40	2.25	3.00	2.80	2.60
C316	3.00	2.25	1.75	1.67	1.00	1.00	2.00	-	-	1.00	-	1.50	2.20	1.50
C317	2.60	2.00	2.80	1.80	1.60	2.00	1.33	1.00	1.50	1.50	1.75	1.60	2.80	2.40
Semester 7														
C401	3.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.50	2.00	2.50	2.00	1.60	2.00
C403	3.00	2.40	2.00	2.75	-	1.60	-	1.75	2.00	1.25	3.00	3.00	3.00	2.00
C404	2.00	1.60	2.25	2.33	1.60	1.60	1.00	1.00	1.50	1.25	1.60	1.33	3.00	2.25
C405	3.00	2.00	3.00	-	1.33	2.00	-	-	1.00	2.00	-	1.00	3.00	1.25
C406	3.00	2.75	3.00	-	-	-	1.00	-	-	1.00	-	1.00	2.00	1.25
C407	3.00	1.50	2.20	2.33	1.50	1.67	2.00	1.00	2.00	1.67	1.67	1.40	2.40	1.80
Semester 8														
C411	2.50	2.50	2.33	2.50	1.50	2.00	2.00	1.67	2.33	2.00	2.33	2.00	2.25	1.50
C412	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.67	1.00	1.67	1.50	2.75	2.75
C413	3.00	3.00	3.00	1.67	2.00	1.00	-	-	2.00	3.00	-	1.00	2.25	1.25

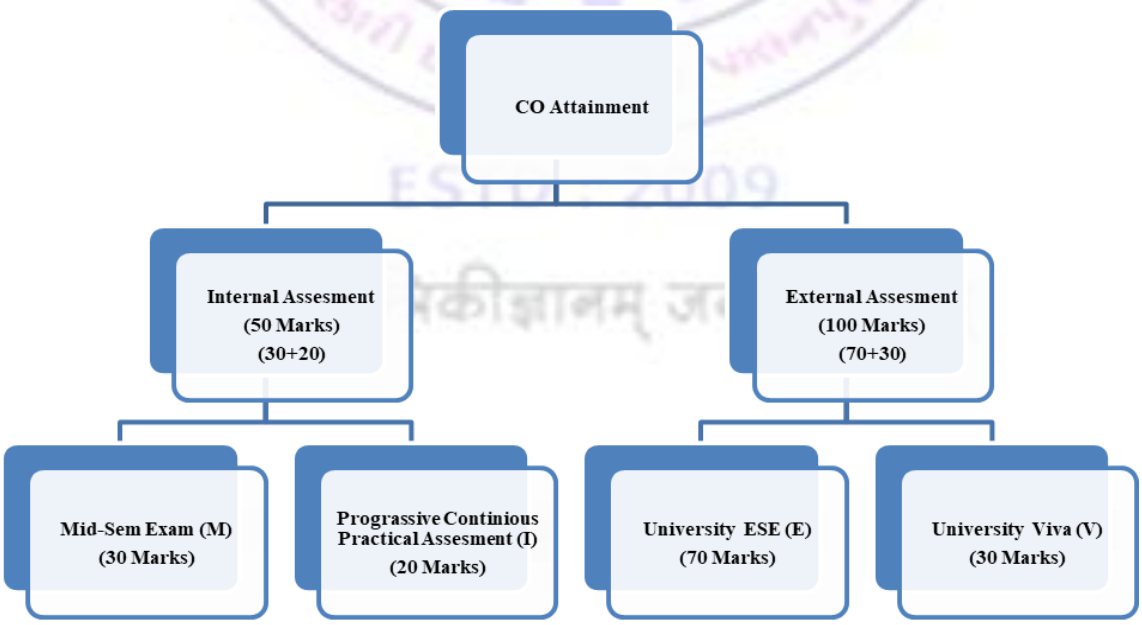
3.2. Attainment of Course Outcomes (50)

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

As described in section 2.1.1, various courses offered to the students of B.E. Mechanical Engineering as per GTU curriculum has following evaluation schemes. Structure and weightage for CO attainment are as shown in Fig. 3.2.1.1.



i. For Academic Year: 2019-20 and 2020-21



ii. For Academic Year: 2018-19

FIG: 3.2.1.1 Structure and weightage for CO-Attainment

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 2.2.2.1. For the courses having 150 marks, component wise marks distribution is shown below.

Internal Assessment
(a) Mid-Semester Exam (M) (30 Marks)
(b) Continuous evaluation of practical work (I) (20 Marks)

External Assessment
(a) End semester exam (E) (70 Marks)
(b) End semester practical examination (V) (30 Marks)

For the courses having only theory component of 100 marks, there is only one component for each, external and internal evaluation i.e. E and M respectively and their maximum marks are as mentioned above. For the courses having only practical component of 100, there is only one component for each, external and internal evaluation i.e. V and I respectively 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 provides the grades for individual course. Mechanical Engineering department has set target value of 45% marks in all components for 3rd semester and 50% in 4th to 8th semester courses and 40% marks in all components for 1st and 2nd Semester courses. The evaluation process is based on result/marks of the students in various components listed below.

Measuring attainment of COs through Mid-Semester Exam, Assignments, Continuous Evaluation, University Exam and University Viva

Mid-Semester Exam

The MSE question papers are prepared as per content covered. Total marks for the MSE examination is 30 and questions are aligned with Bloom's level. A question in MSE question paper is prepared as per number of COs covered by the course coordinator as per content of MSE, and marks obtained by the students in particular question is directly mapped with the CO addressed by the question. While preparing the question paper, it is ascertained that optional questions are asked from same CO so that students will attempt all the question related to COs covered as per MSE syllabus. MSE question paper is collectively prepared by all the teachers associated with the course. After MSE, PAC assesses the quality of question papers and necessary instructions are issued to the course coordinator if required. This procedure has been followed for the year 2018-19 for 30 marks and for 2019-20 & 2020-21, two PA each of 10 marks are taken as per CO covered and two ALA (Assignment/Power Point presentation) has been given as per remaining COs, which discussed below:

ALA (Assignment/Power Point presentation)

To improve the understanding of the students about the course content a certain number of assignments are given to the students at regular intervals depending upon the content being covered in the class. This practice has been implemented during academic year 2019-20 onwards. Its weightage is of 10 marks. Marks are given on the basis of performance of the students. All remaining COs are covered through the assignments. Attempts are made to ensure that students respond to all COs. The assignment and open-ended problems are prepared collectively by all the teachers associated with the Course.

Continuous Evaluation of Practical work

During laboratory hours students are required to perform experiments in a small group. Their evaluation during practical hours is considered under this head and its weightage is of 20 marks. Continuous evaluation is done and marks are awarded according to the performance of the students in conducting the experiments, calculations made and conclusions drawn, answering the quiz and oral questions during laboratory session. During the year 2019-20 onward rubrics based evaluation has been started. GTU provides the list of experiments to be performed with the flexibility of designing the experiments such that all the course COs are covered during practical hours.

University Theory Exam

End semester exam question paper of each course is normally drawn as per GTU guidelines conforming to the level of learning and curriculum weights. Question paper is of 70 marks and it addresses all COs of the course. Assessment is done by a teacher of affiliated colleges of the university and identity of the student is kept confidential. GTU provides the result in the form of grades. The absolute grading system is adopted by the university and hence for the purpose attainment, these grades are converted into marks as per the below-given table.

Grade	Marks allotted out of 70
AA	65
AB	56
BB	49
BC	42
CC	35
CD	29
DD	26
FF	12

University Viva

University practical examination is conducted by the examiners appointed by the GTU. The examiners are faculty members of other GTU affiliated colleges. The practical and viva voce examination is conducted in a way so that all the COs are covered during the exam. University assigns grades to the students and same are converted into marks as per below-given table.

Grade	Relative Marks allotted
AA	28
AB	24
BB	21
BC	18
CC	15
CD	13
DD	11
FF	5

Measuring Course Outcomes attained through External and Internal Assessments:

(a) Attainment Level 1: 60% students scoring more than 50% in Internal and External assessments for 4th semester to 8th semester courses, 60% students scoring more than 45% in Internal and External assessments for 3rd semester courses and 60% students scoring more than 40% in Internal and External assessments for 1st semester and 2nd semester courses.

(b) Attainment Level 2: 70% students scoring more than 50% in Internal and External assessments for 4th Semester to 8th Semester courses, 70% students scoring more than 45% in Internal and

External assessments for 3rd semester courses and 70% students scoring more than 40% in Internal and External assessments for 1st semester and 2nd semester courses.

(c) Attainment Level 3: 80% students scoring more than 50% in Internal and External assessments for 4th semester to 8th semester courses, 80% students scoring more than 45% in Internal and External assessments for 3rd semester courses and 80% students scoring more than 40% in Internal and External assessments for 1st semester and 2nd semester courses.

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

Table 3.2.2.1 CO attainment matrix for A.Y. 2020-21 (CAY)

COURSE CODE	CO1	CO2	CO3	CO4	CO5
Semester 1					
C103N	3	3	3	3	3
C106N	3	3	3	3	3
C107N	3	3	3	3	3
C109N	3	3	3	3	3
C110N	2	1	3	0	1
C112N	3	3	-	-	-
Semester 2					
C101N	3	3	3	3	3
C102N	3	3	3	3	3
C104N	3	3	3	3	3
C105N	3	3	3	3	3
C108N	3	3	3	3	3
C111N	3	3	3	3	3
Semester 3					
C203N	3	3	3	3	3
C205N	2	2	2	2	2
C206N	2	3	2	2	3
C207N	1	0	2	1	1
C208N	2	0	0	0	0
C209N	3	3	3	3	3
Semester 4					
C211N	3	3	3	3	3
C213N	3	3	3	3	3
C215N	3	2	3	2	2
C216N	3	3	3	3	3
C217N	3	3	3	3	-
C218N	3	3	3	3	-
Semester 5					
C301N	3	3	3	3	3
C303N	3	3	3	3	3
C304N	3	3	2	3	3
C305N	2	0	1	1	1
C306N	2	2	2	3	1
C307N	2	2	3	3	3
C308N	2	2	2	2	-
Semester 6					
C311N	3	3	3	3	3

C313N	3	3	3	3	3
C314N	3	3	3	3	3
C315N	3	3	3	3	3
C316N	3	3	3	2	3
C317N	3	3	3	3	3
C318N	3	3	3	3	3
C319N	2	3	3	3	3
C320N	3	3	3	3	3
C321N	3	3	3	3	-
Semester 7					
C401	3	3	3	3	3
C403	3	3	3	2	3
C404	3	3	3	3	3
C405	3	3	3	3	-
C406	3	3	3	3	-
C407	3	3	3	3	3
Semester 8					
C411	3	3	3	3	3
C412	3	3	3	3	-
C413	3	3	3	3	-

Table 3.2.2.2 CO attainment matrix for A.Y. 2019-20 (CAY*m1*)

COURSE CODE	CO1	CO2	CO3	CO4	CO5
Semester 1					
C103N	1	2	3	3	3
C106N	3	3	3	3	-
C107N	2	0	0	3	3
C109N	3	1	1	1	2
C110N	2	2	0	3	2
C112N	3	3	-	-	-
Semester 2					
C101N	3	3	3	3	3
C102N	3	3	3	3	3
C104N	3	3	3	3	-
C105N	3	3	3	3	3
C108N	3	3	3	3	3
C111N	2	2	2	2	2
Semester 3					
C203N	3	3	3	3	3
C205N	3	3	2	0	3
C206N	2	3	3	2	3
C207N	1	0	0	3	0
C208N	1	1	0	0	3
C209N	3	3	3	3	3
Semester 4					
C211N	3	3	3	3	3
C213N	3	3	3	3	-

C215N	3	3	3	3	3
C216N	2	2	2	3	3
C217N	3	3	3	3	-
C218N	3	3	3	3	-
Semester 5					
C301	3	3	3	3	3
C302	3	3	3	3	3
C303	1	2	1	1	1
C304	3	3	3	3	-
C305	2	2	1	3	2
C306	3	3	3	3	-
C307	3	2	1	3	2
Semester 6					
C311	3	3	3	3	3
C312	0	2	3	3	-
C313	3	3	3	3	3
C314	3	3	3	3	-
C315	2	2	3	3	3
C316	3	3	3	3	3
C317	3	3	3	3	3
Semester 7					
C401	3	3	3	3	3
C403	3	2	3	3	3
C404	3	3	3	3	3
C405	3	3	3	3	-
C406	3	3	3	3	-
C407	3	3	3	2	3
Semester 8					
C411	3	3	3	3	3
C412	3	3	3	3	-
C413	3	3	3	3	-

Table 3.2.2.3 CO attainment matrix for A.Y. 2018-19 (CAY*m2*)

COURSE CODE	CO1	CO2	CO3	CO4	CO5
Semester 1					
C103N	2	2	3	2	3
C106N	3	3	3	3	-
C107N	1	2	1	2	2
C109N	2	3	2	0	0
C110N	1	3	0	0	1
C112N	3	3	-	-	-
Semester 2					
C101N	3	3	3	3	3
C102N	2	2	2	2	2
C104N	1	2	1	2	-
C105N	3	3	3	3	3
C108N	3	3	3	3	3
C111N	2	2	2	1	2

Semester 3					
C201	1	1	1	1	1
C202	0	0	0	0	0
C203	3	3	3	3	3
C204	3	2	2	1	-
C205	3	1	1	2	2
C206	1	1	1	1	1
C207	1	2	2	2	-
Semester 4					
C211	3	3	3	3	3
C212	1	0	-	-	-
C213	1	1	1	1	1
C214	1	2	1	1	1
C215	2	0	0	2	2
C216	1	2	1	1	1
C217	2	2	3	3	-
Semester 5					
C301	3	3	3	3	3
C302	3	3	3	3	3
C303	3	3	3	3	3
C304	3	3	3	3	-
C305	3	3	3	3	3
C306	3	3	3	3	-
C307	3	2	3	2	1
Semester 6					
C311	3	3	3	3	3
C312	3	3	3	3	-
C313	2	3	3	3	3
C314	2	3	2	2	-
C315	3	3	3	3	3
C316	3	2	0	2	3
C317	3	3	3	3	3
Semester 7					
C401	3	3	3	3	3
C403	1	2	3	3	3
C404	3	3	3	3	3
C405	2	3	3	3	-
C406	3	3	3	3	-
C407	3	3	3	2	3
Semester 8					
C411	3	3	3	3	3
C412	3	3	3	3	-
C413	3	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)

PO and PSO attainment is evaluated based on the performance of Direct assessment and Indirect assessment processes. To measure attainment of POs and PSOs, direct and indirect assessments have 80% and 20% weightage respectively.

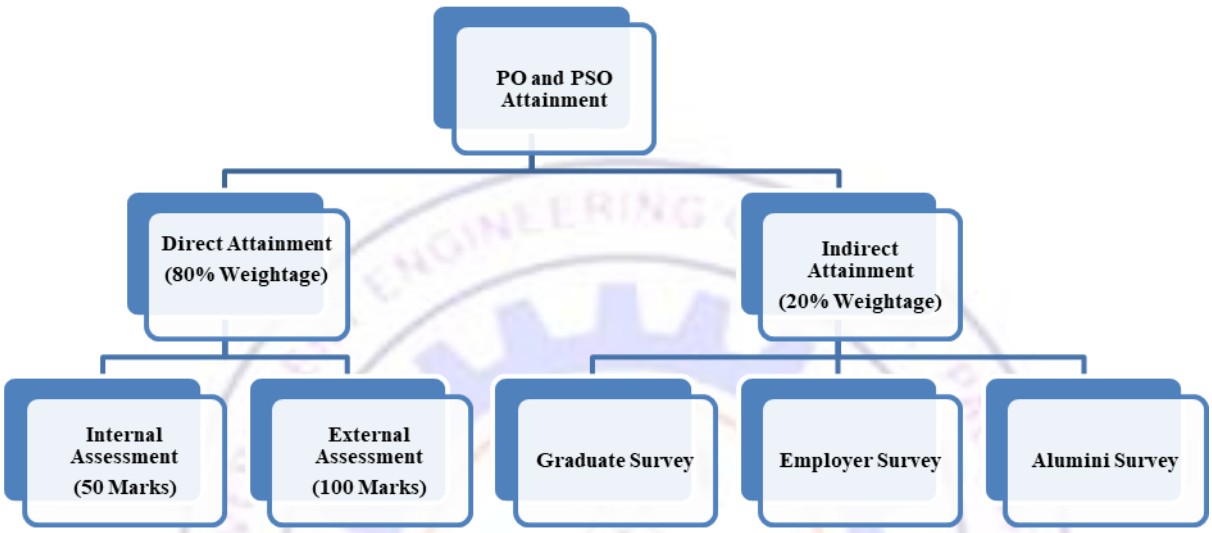


Fig. 3.3.1.1 Structure for PO and PSO attainment

Direct attainment

The direct assessment consists of the performance of the students in internal and external assessments as described above in Fig. 3.3.1.1. Each CO of a particular course is mapped with the POs and PSOs with attainment level 1, 2, and 3. Accordingly, CO attainment is evaluated through internal and external assessment processes. The value for a particular CO attainment is used to derive the attainment of particular mapped PO and PSO. Likewise, attainment of all POs and PSOs with respect of all mapped COs are derived and tabulated in CO - PO & PSO attainment matrix. The last row of CO - PO & PSO attainment matrix indicates weighted average of all mapped POs &PSOs attainment with particular COs, which in turns, represents PO and PSO attainment for a particular course. A sample CO - PO & PSO attainment matrix of a course is given below. It represents the contribution of the respective course in direct attainment of POs and PSOs.

Table 3.3.1.1 CO - PO & PSOs attainment matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1.00	-	-	-	-	2.00	2.00	-	1.00	1.00	1.00	1.00	2.00	3.00
CO2	3.00	3.00	3.00	3.00	2.00	3.00	3.00	1.00	2.00	-	3.00	2.00	3.00	3.00
…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
COn	3.00	2.00	2.00	2.00	2.00	2.00	2.00	1.00	2.00	-	1.00	2.00	3.00	2.00
Course	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.67	1.00	1.67	1.50	2.75	2.75

Course attainment value for each PO and PSO is then tabulated for all the course of the program to measure the direct attainment value for POs and PSOs.

Table 3.3.1.2 Course wise PO and PSO attainment matrix

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Course 1	-	-	-	-	-	-	-	-	-	2.00	-	1.00	-	1.00
Course 2	1.73	1.47	1.78	1.33	-	-	-	1.00	1.17	1.33	-	1.33	1.33	0.83
…	…	…	…	…	…	…	…	…	…	…	…	…		
…	…	…	…	…	…	…	…	…	…	…	…	…		
…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Course n	3.00	3.00	3.00	1.67	2.00	1.00	-	-	2.00	3.00	-	1.00	2.25	1.25
Direct Attainment	2.04	1.74	1.84	1.75	1.42	1.62	1.55	1.32	1.60	1.45	1.59	1.40	1.81	1.48

Indirect attainment

Indirect assessment includes and graduate survey, alumni survey and employer survey. These surveys are based on a questionnaire which directly resembles with POs and PSOs. Feedback given by institute graduate, alumni and employer is then analysed and transformed into weightage of 1 to 3. Below illustrative table shows the contribution of institute graduate, alumni and employer surveys toward POs and PSOs attainment. The average of these three surveys concludes with indirect attainment of POs and PSOs.

Table 3.3.1.3 Attainment Levels by Indirect Assessment Tools

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Graduate Survey	2.71	2.71	2.71	2.33	1.96	2.13	2.13	2.33	2.17	2.13	2.17	2.25	2.54	2.25
Alumni Survey	2.56	2.56	2.56	2.25	2.25	2.50	2.50	2.38	2.63	2.63	2.63	2.44	2.56	2.50
Employer Survey	2.00	2.00	2.00	1.80	2.00	2.30	2.30	2.40	2.40	2.50	2.40	2.50	2.10	2.40
Indirect Attainment	2.42	2.42	2.42	2.13	2.07	2.31	2.31	2.37	2.40	2.42	2.40	2.40	2.40	2.38

Overall attainment of POs and PSOs

The overall attainment for each PO and PSO is derived as per weightage of direct and indirect assessment. To measure the attainment of POs and PSOs, direct assessment has 80% weightage and indirect assessment has 20% weightage. Following illustrative table gives an insight of evaluating weightage of direct and indirect attainment in measuring overall attainment of POs and PSOs.

Table 3.3.1.4 Overall attainment of POs and PSOs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Direct Attainment (80% weightage)	2.04	1.74	1.84	1.75	1.42	1.62	1.55	1.32	1.60	1.45	1.59	1.40	1.81	1.48
Indirect Attainment (20% weightage)	2.42	2.42	2.42	2.13	2.07	2.31	2.31	2.37	2.40	2.42	2.40	2.40	2.40	2.38
Total Attainment	2.12	1.88	1.96	1.83	1.55	1.76	1.70	1.53	1.76	1.64	1.76	1.60	1.93	1.66

3.3.2. Provide results of evaluation of each PO and PSO (40)

Table 3.3.2.1 PO and PSO Attainment for AY 2020-21 (CAY)

Attainment Levels by Direct Assessment														
Course Code	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
Semester 1														
C112N	-	-	-	-	-	2.00	-	3.00	1.00	2.00	-	1.00	1.00	2.00
C110N	1.40	1.40	1.27										0.93	
C109N	3.00	2.00	3.00	-	3.00	2.25	-	-	-	2.00	-	1.00	2.20	1.00
C103N	3.00	3.00	-	-	-	2.75	-	-	3.00	-	-	2.00	2.00	1.00
C107N	2.00	1.00	1.00	-	1.00	-	1.00	-	-	-	-	1.00	1.40	1.60
C106N	2.00	2.00	3.00	-	3.00	2.00	2.25	-	2.00	-	-	-	1.33	1.25
Semester 2														
C104N	2.50	2.00	1.50	1.50	1.00								1.75	
C105N	3.00	1.40	-	-	-	-	-	1.00	1.00	1.60	-	-	2.00	1.00
C102N	2.60	2.20	2.67	2.00	-	-	-	1.50	1.75	2.00	-	2.00	3.00	2.20
C108N	1.40	1.33	1.67	-	1.33	1.00	1.00	1.00	-	-	-	1.00	2.00	2.00
C111N	3.00	3.00	2.40	-	-	-	-	-	-	-	1.00	1.00	2.00	1.00
C101N	-	-	-	-	-	-	-	-	-	2.00	-	1.00	-	1.00
Semester 3														
C209N	-	-	-	-	-	-	-	3.00	1.67	2.67	-	2.00	-	1.40
C208N	0.40	0.40	0.27	0.27	-	-	-	-	-	-	0.13	0.33	0.27	0.20
C205N	1.60	1.20	1.20	1.07	1.33	1.11	1.00	0.67	0.67	0.83	0.89	0.93	1.73	1.47
C206N	2.20	2.20	2.20	1.80	1.93	1.50	2.00	1.33	2.00	1.67	1.00	1.92	2.00	1.13
C207N	1.00	0.67	-	-	1.33	1.33	-	-	0.00	-	-	0.67	0.78	0.17
C203N	3.00	3.00	2.60	2.80	2.25	2.00	2.00	2.00	2.40	2.00	2.00	2.60	3.00	2.60
Semester 4														
C211N	3.00	3.00	2.60	2.80	2.25	2.00	2.00	2.00	2.40	2.00	2.00	2.60	3.00	2.60
C213N	2.25	1.67	-	-	1.67	1.50	1.67	1.00	1.33	2.00	1.00	2.00	2.25	2.00
C215N	2.40	1.73	1.50	1.27	0.89	-	-	-	-	0.75	-	0.80	1.60	0.80
C216N	3.00	2.40	2.67	3.00	2.00	2.67	-	2.00	2.00	1.00	-	1.33	3.00	2.20
C217N	3.00	1.75	1.25	0.50	2.00	1.25	1.00	0.00	1.25	1.50	1.25	1.25	2.75	2.00
C218N	-	-	-	-	-	2.50	2.00	2.50	2.25	2.50	2.50	3.00	1.00	3.00
Semester 5														
C301N	2.40	2.33	2.50	2.75	2.80	2.60	2.40	2.00	3.00	2.40	2.80	2.60	2.60	3.00
C303N	-	-	-	-	-	1.60	2.00	2.25	2.20	2.00	1.75	2.33	1.60	2.00
C304N	2.80	1.87	1.87	1.87	1.00	-	-	-	-	0.93	-	-	1.87	-
C305N	1.00	0.73	0.53	0.67	-	0.47	-	0.42	0.60	0.33	1.00	1.00	1.00	0.67
C306N	2.40	1.60	1.33	-	-	2.00	2.00	2.00	1.60	1.60	2.00	1.67	1.67	-
C307N	2.60	2.07	1.93	1.75	1.47	1.17	1.11	0.56	1.11	1.67	1.17	2.20	2.20	1.73
C308N	1.00	1.11	1.11	1.00	1.33	0.67	-	-	0.67	0.67	-	0.67	1.33	-
Semester 6														
C311N	2.40	2.33	2.50	2.75	2.80	2.60	2.40	2.00	3.00	2.40	2.80	2.60	2.60	3.00
C313N	0.00	0.00	0.00	0.00	0.00	0.80	0.00	2.00	2.00	1.20	1.20	2.00	2.00	0.00
C314N	3.00	2.40	2.80	2.00	1.00	2.60	3.00	1.00	1.67	2.00	1.00	2.20	3.00	2.20
C315N	2.60	2.50	2.00	2.67	2.20	2.00	0.67	1.00	1.33	1.75	2.00	2.00	2.20	1.80

C316N	2.60	2.60	2.47	2.47	2.33	2.47	2.20	2.47	2.47	2.33	2.47	2.47	3.00	3.00
C317N	2.20	2.25	2.25	2.25	2.00	2.00	2.00	1.00	1.75	1.00	2.00	1.60	2.80	2.80
C318N	2.40	1.80	2.75	2.50	1.80	1.80	1.00	1.00	1.60	1.25	1.80	1.50	3.00	2.40
C319N	2.60	2.63	2.67	2.00	2.00	-	-	-	2.00	3.00	-	1.00	2.13	1.33
C320N	3.00	2.40	2.00	2.00	-	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.50	2.50
C321N	3.00	3.00	3.00	3.00	2.75	3.00	2.75	2.75	2.25	2.25	2.75	2.75	3.00	3.00
Semester 7														
C403	2.80	2.27	1.87	2.50	-	1.53	-	1.67	1.87	1.17	3.00	2.80	2.80	1.87
C404	2.00	1.60	2.25	2.33	1.60	1.60	1.00	1.00	1.50	1.25	1.60	1.33	3.00	2.25
C405	3.00	2.00	3.00	-	1.33	2.00	-	-	1.00	2.00	-	1.00	3.00	1.25
C406	3.00	2.75	3.00	-	-	-	1.00	-	-	1.00	-	1.00	2.00	1.25
C401	3.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.50	2.00	2.50	2.00	1.60	2.00
C407	3.00	1.50	2.20	2.33	1.50	1.67	2.00	1.00	2.00	1.67	1.67	1.40	2.40	1.80
Semester 8														
C412	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.67	1.00	1.67	1.50	2.75	2.75
C411	2.50	2.50	2.33	2.50	1.50	2.00	2.00	1.67	2.33	2.00	2.33	2.00	2.25	1.50
C413	3.00	3.00	3.00	1.67	2.00	1.00	-	-	2.00	3.00	-	1.00	2.25	1.25
Direct Attainment	2.36	1.97	2.05	1.94	1.78	1.82	1.71	1.57	1.77	1.72	1.77	1.65	2.12	1.75
Attainment Levels by Indirect Assessment Tools														
Graduate Survey	2.36	2.36	2.36	2.18	2.36	2.73	2.73	2.45	2.55	2.45	2.55	2.73	2.55	2.55
Alumini Survey	2.29	2.29	2.29	2.57	2.14	2.14	2.14	2.57	2.57	2.43	2.57	2.14	2.29	2.43
Employer Survey	2.67	2.67	2.00	2.00	1.67	2.67	2.67	2.33	2.00	2.33	2.00	2.33	2.67	2.33
Indirect Attainment	2.44	2.44	2.22	2.25	2.06	2.51	2.51	2.45	2.37	2.40	2.37	2.40	2.50	2.44
Total Attainment Level of POs and PSOs														
Direct Attainment	2.36	1.97	2.05	1.94	1.78	1.82	1.71	1.57	1.77	1.72	1.77	1.65	2.12	1.75
Indirect Attainment	2.44	2.44	2.22	2.25	2.06	2.51	2.51	2.45	2.37	2.40	2.37	2.40	2.50	2.44
Total Attainment	2.37	2.06	2.09	2.00	1.83	1.96	1.87	1.75	1.89	1.85	1.89	1.80	2.19	1.89

Table 3.3.2.2 PO and PSO Attainment for AY 2019-20 (CAY*m1*)

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Semester 1														
C103N	2.40	3.00	-	-	-	2.17	-	-	3.00	-	-	1.00	1.60	0.67
C106N	2.00	1.50	-	-	-	2.75	2.75	1.50	-	2.00	-	2.00	2.50	1.50
C107N	1.07	1.00	0.50	-	0.50	-	0.67	-	-	-	-	0.53	0.93	0.93
C109N	1.50	0.67	1.00	-	2.00	1.00	-	-	-	0.67	-	0.44	0.93	0.44
C110N	1.80	1.80	1.53	-	-	-	-	-	-	-	-	-	1.17	-
C112N	-	-	-	-	-	2.00	-	3.00	1.00	2.00	-	1.00	1.00	2.00
Semester 2														
C101N	-	-	-	-	-	-	-	-	-	2.00	-	1.00	-	1.00
C102N	2.60	2.20	2.67	2.00	-	-	-	1.50	1.75	2.00	-	2.00	2.00	1.25
C104N	2.50	2.00	1.50	1.50	1.00	-	-	-	-	-	-	-	1.75	-
C105N	3.00	1.40	-	-	-	-	-	1.00	1.00	1.60	-	-	2.00	1.00
C108N	1.40	1.33	1.67	-	1.33	1.00	1.00	1.00	-	-	-	1.00	2.00	2.00
C111N	2.00	2.00	1.60	-	-	-	-	-	-	-	0.67	0.67	1.33	0.67
Semester 3														
C203N	3.00	3.00	2.60	2.80	2.25	2.00	2.00	2.00	2.40	2.00	2.00	2.60	3.00	2.60
C205N	1.73	1.33	1.33	1.13	1.56	1.33	1.08	0.83	0.33	0.92	1.00	1.00	1.80	1.33
C206N	2.40	2.40	2.40	2.00	2.13	1.75	2.33	1.50	3.00	2.00	1.33	2.08	2.20	1.33
C207N	1.00	0.67	-	-	1.00	0.00	-	-	0.50	-	-	0.67	0.58	0.44
C208N	0.80	0.80	0.73	0.80	-	-	-	-	-	-	0.27	0.27	0.53	0.27
C209N	-	-	-	-	-	-	-	3.00	1.44	2.11	-	1.75	-	1.20
Semester 4														
C211N	3.00	3.00	2.60	2.80	2.25	2.00	2.00	2.00	2.40	2.00	2.00	2.60	3.00	2.60
C213N	2.25	1.67	-	-	1.67	1.50	1.67	1.00	1.33	2.00	1.00	2.00	2.25	2.00
C215N	3.00	2.20	2.00	1.60	1.33	-	-	-	-	1.00	-	1.00	2.00	1.00
C216N	2.40	2.00	2.44	3.00	2.00	2.44	-	1.78	1.33	1.00	-	1.11	2.13	0.83
C217N	3.00	1.75	1.67	1.00	2.67	1.67	1.33	-	2.50	2.00	1.25	1.67	2.75	2.00
C218N	-	-	-	-	-	2.50	2.00	2.50	2.25	2.50	2.50	3.00	1.00	3.00
Semester 5														
C301	2.40	2.33	2.50	2.75	2.80	2.60	2.40	2.00	3.00	2.40	2.80	2.60	2.60	3.00
C302	2.00	2.00	1.50	1.67	1.50	1.40	-	2.40	1.00	-	-	1.00	2.60	1.50
C303	1.20	1.08	1.50	1.00	-	1.00	-	0.67	0.83	0.83	-	1.33	0.93	0.44
C304	1.75	2.25	1.75	1.33	1.33	-	1.00	-	1.00	1.00	-	1.00	2.00	1.75
C305	1.87	1.87	1.53	1.83	1.67	1.33	1.67	1.00	1.53	1.33	0.67	1.80	1.47	1.67
C306	3.00	1.25	3.00	3.00	1.67	2.00	1.00	-	-	2.00	2.00	1.00	2.25	2.00
C307	2.20	1.47	1.27	1.17	0.67	-	-	-	-	0.73	-	-	1.47	-

Semester 6														
C311	2.40	2.33	2.50	2.75	2.80	2.60	2.40	2.00	3.00	2.40	2.80	2.60	2.60	3.00
C312	2.00	1.75	2.00	0.67	1.17	1.00	1.50	1.00	1.33	1.17	0.83	1.58	1.58	1.33
C313	3.00	3.00	2.75	2.25	2.00	2.00	2.50	1.00	2.00	2.00	-	2.00	3.00	2.00
C314	2.00	2.00	1.67	2.50	2.33	1.67	1.33	1.50	2.00	2.50	2.00	2.00	2.50	2.25
C315	2.40	2.25	2.33	2.33	2.17	2.27	2.42	2.42	2.50	2.13	2.17	2.60	2.40	2.27
C316	3.00	2.25	1.75	1.67	1.00	1.00	2.00	-	-	1.00	-	1.50	2.20	1.50
C317	2.60	2.00	2.80	1.80	1.60	2.00	1.33	1.00	1.50	1.50	1.75	1.60	2.80	2.40
Semester 7														
C401	3.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.50	2.00	2.50	2.00	1.60	2.00
C403	2.80	2.20	1.80	2.50	-	1.47	-	1.58	1.87	1.17	3.00	2.80	2.80	1.87
C404	2.00	1.60	2.25	2.33	1.60	1.60	1.00	1.00	1.50	1.25	1.60	1.33	3.00	2.25
C405	3.00	2.00	3.00	-	1.33	2.00	-	-	1.00	2.00	-	1.00	3.00	1.25
C406	3.00	2.75	3.00	-	-	-	1.00	-	-	1.00	-	1.00	2.00	1.25
C407	2.80	1.42	2.00	2.33	1.42	1.56	1.67	0.89	2.00	1.56	1.67	1.33	2.20	1.67
Semester 8														
C411	2.50	2.50	2.33	2.50	1.50	2.00	2.00	1.67	2.33	2.00	2.33	2.00	2.25	1.50
C412	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.67	1.00	1.67	1.50	2.75	2.75
C413	3.00	3.00	3.00	1.67	2.00	1.00	-	-	2.00	3.00	-	1.00	2.25	1.25
Direct Attainment	2.30	1.93	2.01	1.96	1.70	1.72	1.71	1.58	1.78	1.68	1.73	1.53	2.02	1.61
Attainment Levels by Indirect Assessment Tools														
Graduate Survey	2.43	2.43	2.43	2.25	2.39	2.32	2.32	2.14	2.39	2.11	2.39	2.11	2.39	2.25
Alumini Survey	2.56	2.56	2.56	2.25	2.25	2.50	2.50	2.38	2.63	2.63	2.63	2.44	2.56	2.50
Employer Survey	2.00	2.00	2.00	1.80	2.00	2.30	2.30	2.40	2.40	2.50	2.40	2.50	2.10	2.40
Indirect Attainment	2.33	2.33	2.33	2.10	2.21	2.37	2.37	2.31	2.47	2.41	2.47	2.35	2.35	2.38
Total Attainment Level of Pos and PSOs														
Direct Attainment	2.30	1.93	2.01	1.96	1.70	1.72	1.71	1.58	1.78	1.68	1.73	1.53	2.02	1.61
Indirect Attainment	2.33	2.33	2.33	2.10	2.21	2.37	2.37	2.31	2.47	2.41	2.47	2.35	2.35	2.38
Total Attainment	2.30	2.01	2.08	1.99	1.81	1.85	1.84	1.72	1.92	1.82	1.88	1.70	2.08	1.77

Table 3.3.2.3 PO and PSO Attainment for AY 2018-19 (CAY*m2*)

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Semester 1														
C103N	2.40	2.00	-	-	-	2.08	-	-	2.00	-	-	1.33	1.53	0.67
C106N	2.00	1.50	-	-	-	2.75	2.75	1.50	-	2.00	-	2.00	2.50	1.50
C107N	1.07	0.67	0.50	-	0.50	-	0.56	-	-	-	-	0.53	0.80	0.87
C109N	1.75	1.10	1.67	-	0.00	0.83	-	-	-	0.00	-	0.23	1.13	0.22
C110N	1.00	1.00	0.73	-	-	-	-	-	-	-	-	-	0.68	-
C112N	-	-	-	-	-	2.00	-	3.00	1.00	2.00	-	1.00	1.00	2.00
Semester 2														
C101N	-	-	-	-	-	-	-	-	-	2.00	-	1.00	-	1.00
C102N	1.73	1.47	1.78	1.33	-	-	-	1.00	1.17	1.33	-	1.33	1.33	0.83
C104N	1.25	1.11	0.83	0.83	0.50	-	-	-	-	-	-	-	0.92	-
C105N	3.00	1.40	-	-	-	-	-	1.00	1.00	1.60	-	-	2.00	1.00
C108N	1.40	1.33	1.67	-	1.33	1.00	1.00	1.00	-	-	-	1.00	2.00	2.00
C111N	1.80	1.80	1.40	-	-	-	-	-	-	-	0.60	0.60	1.20	0.60
Semester 3														
C201	1.00	1.00	0.87	-	-	-	-	-	-	-	-	-	0.67	-
C202	0.00	0.00	-	0.00	0.00	-	-	0.00	0.00	0.00	-	0.00	0.00	0.00
C203	3.00	3.00	2.60	2.80	2.25	2.00	2.00	2.00	2.40	2.00	2.00	2.60	3.00	2.60
C204	2.00	2.00	2.00	2.00	1.50	1.33	1.33	1.33	1.67	0.67	1.33	2.00	2.00	1.83
C205	1.60	1.47	1.20	0.80	1.00	1.08	1.25	0.83	0.93	0.83	0.56	1.27	1.60	1.67
C206	1.00	1.00	1.00	0.80	0.87	0.75	1.00	0.50	1.00	0.67	0.50	0.83	0.93	0.53
C207	1.75	1.50	2.00	1.33	2.00	1.33	-	-	0.67	-	-	1.33	1.33	0.56
Semester 4														
C211	3.00	3.00	2.60	2.80	2.25	2.00	2.00	2.00	2.40	2.00	2.00	2.60	3.00	2.60
C212	0.50	0.33	-	-	0.67	0.50	-	0.67	0.33	0.33	0.00	0.33	0.50	0.33
C213	1.00	0.93	0.80	0.67	0.75	0.67	0.73	0.58	0.67	0.67	0.78	0.73	0.93	0.93
C214	1.13	1.06	0.93	0.86	0.33	-	-	-	-	-	-	0.66	0.79	0.40
C215	1.20	0.67	0.50	0.40	0.67	-	-	-	-	0.33	-	0.40	0.80	0.40
C216	1.20	0.93	1.00	0.67	0.78	1.00	0.33	0.78	0.67	0.33	-	0.56	0.87	0.58
C217	2.50	2.33	1.92	2.00	1.83	1.56	1.17	0.83	1.67	2.00	1.22	2.25	2.25	1.67
Semester 5														
C301	2.40	2.33	2.50	2.75	2.80	2.60	2.40	2.00	3.00	2.40	2.80	2.60	2.60	3.00
C302	2.00	2.00	1.50	1.67	1.50	1.40	-	2.40	1.00	-	-	1.00	2.60	1.50
C303	3.00	2.50	3.00	2.00	-	2.00	-	2.00	2.50	2.50	-	2.00	2.20	1.00
C304	1.75	2.25	1.75	1.33	1.33	-	1.00	-	1.00	1.00	-	1.00	2.00	1.75
C305	2.80	2.80	2.40	2.75	2.50	2.00	2.00	1.00	2.20	2.00	1.00	2.60	2.20	2.40
C306	3.00	1.25	3.00	3.00	1.67	2.00	1.00	-	-	2.00	2.00	1.00	2.25	2.00
C307	2.20	1.60	1.27	1.25	0.33	-	-	-	-	0.73	-	-	1.47	-

Semester 6														
C311	2.40	2.33	2.50	2.75	2.80	2.60	2.40	2.00	3.00	2.40	2.80	2.60	2.60	3.00
C312	3.00	2.75	2.00	2.00	1.75	1.50	2.00	1.00	1.50	1.50	1.00	2.25	2.50	2.00
C313	2.80	2.80	2.75	2.25	2.00	1.87	2.50	1.00	2.00	2.00	-	1.87	2.80	1.92
C314	1.50	1.44	1.22	1.67	1.67	1.11	0.89	1.00	1.56	1.67	1.33	1.33	1.78	1.78
C315	2.80	2.75	2.60	2.75	2.50	2.60	2.50	2.50	3.00	2.40	2.25	3.00	2.80	2.60
C316	2.00	1.25	1.00	0.78	1.00	0.83	1.50	-	-	0.67	-	0.75	1.53	1.00
C317	2.60	2.00	2.80	1.80	1.60	2.00	1.33	1.00	1.50	1.50	1.75	1.60	2.80	2.40
Semester 7														
C401	3.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.50	2.00	2.50	2.00	1.60	2.00
C403	2.40	1.93	1.67	2.50	-	1.33	-	1.58	1.73	1.17	3.00	2.40	2.40	1.60
C404	2.00	1.60	2.25	2.33	1.60	1.60	1.00	1.00	1.50	1.25	1.60	1.33	3.00	2.25
C405	2.75	1.83	2.75	-	1.22	1.83	-	-	1.00	2.00	-	0.93	2.75	1.17
C406	3.00	2.75	3.00	-	-	-	1.00	-	-	1.00	-	1.00	2.00	1.25
C407	2.80	1.42	2.00	2.33	1.42	1.56	1.67	0.89	2.00	1.56	1.67	1.33	2.20	1.67
Semester 8														
C411	2.50	2.50	2.33	2.50	1.50	2.00	2.00	1.67	2.33	2.00	2.33	2.00	2.25	1.50
C412	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.67	1.00	1.67	1.50	2.75	2.75
C413	3.00	3.00	3.00	1.67	2.00	1.00	-	-	2.00	3.00	-	1.00	2.25	1.25
Direct Attainment	2.04	1.74	1.84	1.75	1.42	1.62	1.55	1.32	1.60	1.45	1.59	1.40	1.81	1.48
Attainment Levels by Indirect Assessment Tools														
Graduate Survey	2.71	2.71	2.71	2.33	1.96	2.13	2.13	2.33	2.17	2.13	2.17	2.25	2.54	2.25
Alumini Survey	2.56	2.56	2.56	2.25	2.25	2.50	2.50	2.38	2.63	2.63	2.63	2.44	2.56	2.50
Employer Survey	2.00	2.00	2.00	1.80	2.00	2.30	2.30	2.40	2.40	2.50	2.40	2.50	2.10	2.40
Indirect Attainment	2.42	2.42	2.42	2.13	2.07	2.31	2.31	2.37	2.40	2.42	2.40	2.40	2.40	2.38
Total Attainment Level of Pos and PSOs														
Direct Attainment	2.04	1.74	1.84	1.75	1.42	1.62	1.55	1.32	1.60	1.45	1.59	1.40	1.81	1.48
Indirect Attainment	2.42	2.42	2.42	2.13	2.07	2.31	2.31	2.37	2.40	2.42	2.40	2.40	2.40	2.38
Total Attainment	2.12	1.88	1.96	1.83	1.55	1.76	1.70	1.53	1.76	1.64	1.76	1.60	1.93	1.66

CRITERION 4	Students' Performance	150

4. STUDENTS' PERFORMANCE (150)

Table 4.1 Admission details of the last three years

Item (Information to be provided cumulatively for all the shifts with explicit headings, wherever applicable)	**CAY** (2020 -21)	**CAYm1** (2019-20)	**CAYm2** (2018-19)	**CAYm3** (2017-18)	**CAYm4** (2016-17)	**CAYm5** (2015-16)	**CAYm6** (2014-15)
Sanctioned intake of the program (N)	60	60	60	60	60	60	60
Total number of students admitted in first year *minus* number of students migrated to other programs/institutions plus no. of students migrated to this program (*N*1)	23	46	57	56	58	61	61
Number of students admitted in 2nd year in the same batch via lateral entry (*N*2)	53	36	7	14	15	15	9
Separate division students, if applicable (N3)	0	0	0	0	0	0	0
Total number of students admitted in the Program (*N*1 + *N*2 + N3)	76	82	64	70	73	76	70

CAY – Current Academic Year (20-21)
CAYm1- Current Academic Year minus1 = Current Assessment Year (2019-20)
CAYm2 - Current Academic Year minus2 = Current Assessment Year minus1 (2018-19)
CAYm3 - Current Academic Year minus3 = Current Assessment Year minus2 (2017-18)
CAYm4 - LYG – Last Year Graduate (2016-17)
CAYm5 - LYGm1 – Last Year Graduate minus 1 (2015-16)
CAYm6 - LYGm2 – Last Year Graduate minus 2 (2014-15)

Table 4.2 Number of students graduated successfully without backlogs

Year of entry	N1 + N2 + N3 (As defined above)	**Number of students who have successfully graduated without backlogs in any semester/year of study (Without Backlog means no compartment or failures in any semester/year of study)**			
		I Year	II Year	III Year	IV Year
CAY(2020-21)	76				
CAY*m1*(2019-20)	82	9			
CAY*m*2(2018-19)	64	2	1		
CAY*m*3(2017-18)	70	14	17	17	
CAY*m4*(2016-17)	73	31	23	23	23
CAY*m5* (LYG) (2015-16)	76	40	30	25	25
CAY*m6* (LYG*m*1) (2014-15)	70	49	37	36	35

Table 4.3 Number of students graduated with backlog successfully

Year of entry	N1 + N2 + N3 (As defined above)	Number of students who have successfully graduated with backlog (Students with backlog in stipulated period of study)			
		I Year	II Year	III Year	IV Year
CAY(2020-21)	76				
CAY*m1*(2019-20)	82	37			
CAY*m2*(2018-19)	64	45	49		
CAY*m3*(2017-18)	70	49	55	54	
CAY*m4*(2016-17)	73	56	68	66	66
CAY*m5* (LYG) (2015-16)	76	61	72	69	69
CAY*m6* (LYG*m*1) (2014-15)	70	60	67	64	64

4.1 Enrolment Ratio (20)

Table 4.1.1 Enrolment Ratio of last three years

Item	CAY (2020-21)	CAYm1 (2019-20)	CAYm2 (2018-19)
Sanctioned intake of the program (N)	60	60	60
Total number of students admitted in first year minus number of students migrated to other programs/institutions plus no. of students migrated to this program (*N*1)	23	46	57
Enrolment Ratio= N1/N	38.33	76.67	95.00

Average: (38.33+76.67+95.00)/3 = *70.00* So, Marks = 16

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 actually 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 = 25 x 0.38 = ***9.50***

Table 4.2.1.1 Success rate without backlog of last three years

Item	Last Year of Graduate, LYG (2016-17)	Last Year of Graduate minus 1, LYGm1 (2015-16)	Last Year of Graduate minus 2, LYGm2 (2014-15)
X = Number of students admitted in the corresponding First Year + admitted in 2nd year via lateral entry and separate division, if applicable	73	76.00	70.00
Y = Number of students who have graduated without backlogs in the stipulated period	23	25.00	35.00
Success Index (SI = Y / X)	0.32	0.33	0.50
Average SI	0.38		

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 actual 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 = 15 × Average SI= 15 x 0.91 = ***13.70***

Table 4.2.2.1 Success rate with backlog of last three years

Item	Last Year of Graduate, LYG (2016-17)	Last Year of Graduate minus 1, LYGm1 (2015-16)	Last Year of Graduate minus 2, LYGm2 (2014-15)
Number of students admitted in the corresponding First Year + admitted in 2nd year via lateral entry and separate division, if applicable	73	76	70
Number of students who have graduated with backlog in the stipulated period	66	69	64
Success Index (SI)	0.90	0.91	0.91
Average Success Index	0.91		

4.3. Academic Performance in Third Year (15)

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.
*Academic Performance = 1.5 * Average API (Academic Performance Index) = 1.5 * 6.86 =* ***10.29***

Table 4.3.1: Academic performance in 3rd year

Academic Performance	CAYm3 (2017-18)	LYG (2016-17)	LYGm1 (2015-16)
Mean of CGPA or Mean Percentage of all successful students (X)	7.31	7.00	6.89
Total no. of successful students (Y)	54	66	69
Total no. of students appeared in the examination (Z)	55	68	72
API = X* (Y/Z)	7.18	6.79	6.60
Average API = (AP1 + AP2 + AP3)/3	6.86		

4.4. Academic Performance in Second Year (15)

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

*Academic Performance = 1.5 * Average API (Academic Performance Index) = 1.5 * 5.49 =* ***8.24***

Table 4.4.1: Academic performance in 2nd year

Academic Performance	CAYm2 (2018-19)	CAYm3 (2017-18)	LYG (2016-17)
Mean of CGPA or Mean Percentage of all successful students (X)	5.44	5.90	6.47
Total no. of successful students (Y)	49	55	68
Total no. of students appeared in the examination (Z)	52	63	71
API = X* (Y/Z)	5.13	5.15	6.20
Average API = (AP1 + AP2 + AP3)/3	5.49		

4.5. Placement, Higher Studies and Entrepreneurship (40)

Assessment Points = 40 × average placement = 40 × 0.36 = ***14.40***

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

Item	LYG (Entry 2016-17)	LYGm1 (2015-16)	LYGm2 (2014-15)
Total No. of Final Year Students (N)	70	69	64
No. of students placed in companies or Government Sector (x)	10	16	26
No. of students admitted to higher studies with valid qualifying scores (GATE or equivalent State or National	5	6	5
No. of students turned entrepreneur in engineering/ technology (z)	1	1	2
x + y + z =	16	23	33
Placement Index : (x + y + z)/N	0.23	0.33	0.52
Average placement= (P1 + P2 + P3)/3	0.36		

4.5a. Provide the placement data in the below mentioned format with the name of the program and the assessment year:

Table 4.5.2 No of students placed in the companies or government sector(X)

LYG - CAYm1 2019-20 (Admission year 2016-17)					
Sr. No.	**Student Name**	**Enrollment no.**	**Employee Name**	**Appointment No.**	**Date of Appointment**
1	Kamal Kant Saini	160610119014	Indian Air Force	Air HQ/C 22238/4/Merit-Jan 21/PO-3 (A)	06/01/2021
2	Patel Smit P.	170613119012	Maxim Tubes Company Pvt. Ltd.	-	05/02/2021
3	Singh Subham R.	160610119054	Gujarat Water Supply & Sewerage Board	મક્મ-2/ એપ્રેન્ટીસ/564	08/03/2021
4	Prajapti Niravbhai P.	170613119013	Vidres India Ceramic Pvt. Ltd.	-	12/01/2021
5	Panchal Jay P.	160610119027	Ingersoll Rand	-	09/04/2021
6	Prajapati Satish A.	160610119044	Ingersoll Rand	-	09/04/2021
7	Thakar Milan M.	1406101119061	New Swan Multitech Ltd.	NSMLV/HR-OL/21/161	09/04/2021
8	Prajapati Vikram S.	160610119045	Maxim Tubes Company Pvt. Ltd.	-	05/05/2021
9	Garambha Chetan M.	170613119003	Sidiya Engineers	-	-

LYG - CAYm1 2019-20 (Admission year 2016-17)					
Sr. No.	**Student Name**	**Enrollment no.**	**Employee Name**	**Appointment No.**	**Date of Appointment**
10	Acharya Yatharth U.	160610119001	ALOR, Ahmedabad	-	16/01/2021

LYGm1 – CAYm2 2018-19 (Admission year 2015-16)					
Sr. No.	**Student Name**	**Enrollment no.**	**Employee Name**	**Appointment No.**	**Date of Appointment**
1	DHOKE SWAPNILKUMAR MANIKBHAI	160613119004	AARENZA DIE CAST PVT. LTD.	Appointed on 12-06-2020	
2	DAS KISLAY	150610119014	SAPE ROADTECH INDIA PVT/ LTD.	Appointed on 18-10-2019	
3	CHAUHAN SURAJSINH	150610119013	VEE KAY VIKRAM & CO.LLP.	Employ code No.: 1580	
4	BAROT BHAVIK	160613119001	ACCUTRACE LABORATORY LLP	ATL/APPOINTMENT/04/20	
5	PARMAR PRADIPKUMAR JAYANTIBHAI	150610119037	UNITED RUBBER INDUSTRIES (I) PVT LTD.	Appointed on 09-12-2019	
6	DHAR AKSHAY	150610119017	JRG AUTOMOTIVE INDUSTRIES INDIA PVT.	Employ code No.:JRG-T045	
7	CHAUDHARI DEVRAJBHAI DALABHAI	150610119007	QUESS	EMPLOYEE CODE NO: AS458990	
8	LACHHWANI JAY RAJKUMAR	150610119024	M\S. MAHARSHI UDYOG	EMPLOYEE CODE NO:00524	
9	RAJPUT BHAVESHJI RAJUJI	150610119055	MADHUSUMAN ENTERPRISES	Appointed on 16/06/2020	
10	LIMBACHIYA PARTHKUMAR	150610119025	INDIAN POST	B2/33/GDSBPM/RAMSAN BO/2019 DATED 10.12.2019	
11	MODI PRASHANT AJAYBHAI	160613119008	GOVT. INDUSTRIAL TRAINING INSTITTUTE	નામાની/પાવન/૩૧/૨૦૧૯-૨૦	
12	SUTHAR SACHINKUMAR JAGADISHLAL	150610119061	DAYTON COOL TECH PVT LTD	APPOINTED ON 13-08-2020	
13	RAMI KULDEEP KAMLESHKUMAR	150610119057	SAI CAD CENTRE	APPOINTED ON 10/02/2019	
14	PANCHAL CHINTANKUMAR K.	150610119032	INDIAN POST	EMPLOYEE ID: 50202341	
15	TAILYSAHU KARTIKKUMAR JAGDISHBHAI	160613119016	SAMPAT ENGINEERING /DEORA GROUP	APPOINTED ON 21/06/2020	
16	PATEL RAHULKUMAR RAJESHBHAI	150610119044	SHIVAM SALES CORPORATION	APPOINTED ON 08/08/2019	

LYGm2 – CAYm3 2017-18 (Admission year 2014-15)					
Sr. No.	**Student Name**	**Enrollment no.**	**Employee Name**	**Appointment No.**	**Date of Appointment**
1	GAJJAR VIKAS DINESHBHAI	140610119013	Indian Post	B2/GDS/ONLINE/ 2NDCYCLE/MUDA RDA BO/2019	
2	PATEL DARSHANKUMAR VIJAYKUMAR	140610119037	Gujarat Multi Gas Base Chemicals PVT.LTD	Appointed AS MAINTAINANCE ENGINEER	
3	PATEL DHAVALKUMAR MAHESHBHAI	140610119038	MILTON	Appointed on 03-08-2018	
4	JOSHI HARSH BHUPENDRAKUMAR	140610119019	Elcen Machines PVT.LTD.	Appointed on 12-01-2020	
5	PATEL RAJKUMAR PRAVINBHAI	140610119043	Navakar Transcore PVT LTD	Appointed on 06-03-2019	
6	PATEL DARSHANKUMAR AMRUTLAL	140610119035	Bhavani Industries India LLP,	Employ code No.: B010100276	
7	SAKSHI KUCHROO	140610119021	Larsen & Turbo	MHL/L&TP/2056/ 2020	
8	PATANI RAHULBHAI VITTHALBHAI	140610119031	Chief Judicial Magistrate Court	B/186/2020	
9	AMIN ARTH ANILKUMAR	140610119001	Ammann India Private Limited	Appointed on 08-07-2019	
10	GORIYA RAIHAN ABDUL KARIM	140610119017	DIP-FLON ENGINEERING & CO	Appointed on 24-12-2019	
11	PATEL MITESH MUKESHBHAI	140610119041	Western Railway	EM/890/1/JE/SUP /2020	
12	NAI NITINBHAI CHIMANLAL	150613119005	UFLEX LIMITED	Employ code No.: 14673	
13	RAVAL VIJAY SHAILESHKUMAR	150613119011	Indian Post	PF/ABPM/SENDH ANI/2019	
14	CHRISTIAN MANAN ROBINSON	140610119011	Ishedu Agrochem PVT.LTD.	IAPL/ADM/HRD/1 46/2020-21	
15	SUTHAR BHARATBHAI HIRABHAI	140610119059	Hindustan Petroleum Corporation Limited	HR:GAT-II/2018-19	
16	SATHAVARA DEVANG ALKESHBHAI	140610119056	Ambica Crane pvt. ltd.	AEC/AL-21/18-19	
17	CHAUDHARY DIPAKKUMAR MEGHARAJBHAI	140610119005	STATE TAX INSPECTOR	APE-80/2018-19-MAIN-CNF	

LYGm2 – CAYm3 2017-18 (Admission year 2014-15)					
Sr. No.	**Student Name**	**Enrollment no.**	**Employee Name**	**Appointment No.**	**Date of Appointment**
18	BADI SIRAJUDIN A	140610119003	SHAZ PACKAGING LLP	Appointed on 28-11-2018	
19	CHAUHAN NIKULKUMAR LAXMANBHAI	140610119008	LEAK-PROOF ENGINEERING (I) PVT. LTD.	Employ code No.: 13185	
20	PRAJAPATI VIJAYKUMAR VIRABHAI	140610119050	ZEAL GEARS PVT. LTD.	Appointed on 25 AUGUST 2020	
21	RATHORE ABHISHEK SINGH MADAN SINGH	140610119054	LIC INDIA	REF : GDO/P&IR	
22	OZA VIRATKUMAR SHAILESHBHAI	140610119026	VARUN ENGINEERING COMPANY	Appointed on 01/01/2019	
23	PATEL VISHALKUMAR RAMJIBHAI	140610119045	ROYAL STEEL INDIA	Employ code No.: 002-2020	
24	PATEL MAHARSHI VASANTBHAI	150613119007	AMMANN INDIA PRIVATE LIMITED	Appointed on 25-02-2019	
25	DHARAVA KETULKUMAR SURESHBHAI	140610119012	SUMEET FACILITIES LIMITED	Appointed on 09/11/2019	
26	MEVADA RAVI	140610119022	MEKINS INDUSTRIES LTD.	MIL/APPT. LR : 0006/2019	

No of students admitted to higher studies with valid qualifying scores (GATE or equivalent State or National Level tests, GRE, GMAT etc.) (Y)

Sr. No.	Enrollment. No.	Student name	Contact No of student	Course Name	Address	Qualifying Scores
LYG - CAYm1 2019-20 (Admission year 2016-17)						
1	170613119009	Panchal Arth N.	7383516508	M. Tech. - AMS	Ganpat University	-
2	160610119005	Bhavsar Neel P.	7801969799	Renewable Energy Systems (M. Eng.)	Hochschule Nordhausen University, Germeny	
3	160610119042	Prajapati Ravi A.	9724389189	M. Tech. - AMS	Ganpat University	-
4	160610119012	Gurjar Samay R.	7016015285	Thermal Science	MSU Baroda	
5	160610119031	Patel Arpankumar N.	6354576752	Quality Engineering Management	Loyalist College, Canada	

Sr. No.	Enrollment. No.	Student name	Contact No of student	Course Name	Address	Qualifying Scores
LYGm1 – CAYm2 2018-19 (Admission year 2015-16)						
1	150610119039	PATEL DHRUVILKUMAR MANUBHAI	9725543281	QUALITY ENGINEERING MANAGEMENT	LAMBTON COLLEGE, TORONTO	
2	160613119010	PANCHAL NIKULKUMAR ISHVARBHAI	9998147445	ME THERMAL ENGINEERING	GOKUL GLOBAL UNIVERSITY	
3	150610119056	RAJPUT UMANG LAKHVEERSINGH	7096537077	QUALITY ENGINEERING MANAGEMENT	LAMBTON COLLEGE,TORONTO	
4	150610119065	RAZRA GOURAV	8238644204	MASTER OF ENGINEERING SCIENCE	SWINBURNE UNIVERSITY OF TECHNOLOGY,AUSTRALIA	
5	150610119047	PATHAN FAISALKHAN	9898168114	M TECH IN CAD/CAM	NIRMA UNIVERSITY	
6	150610119019	GALSAR RAJKUMAR MANHARSINH	9925967800	MANUFACTURING ENGINEERING	SVNIT SURAT	GATE 46.74

Sr. No.	Enrollment. No.	Student name	Contact No of student	Course Name	Address	Qualifying Scores
(LYGm2 – CAYm3 2017-18) (Admission year 2014-15)						
1	140610119016	GOHIL CHIRAG KANAIYALAL	9054215055	MASTER OF DESIGN PROGRAM (PRODUCTION/INDUSTRIAL DESIGN)	IIT KANPUR)	
2	140610119047	PRAJAPATI JHEEL SHAILESHBHAI	9998033727	ME-INTERNAL COMBUSTION ENGINES & AUTOMOBILE	LD COLLEGE AHMEDABAD	
3	140610119036	PATEL DARSHANKUMAR GAUTAMBHAI	9824716914	HIGHER STUDY	SVNIT Surat GATE	
4	140610119053	RATHOD TEJASKUMAR HASMUKHLAL	9409593814	MTECH IN MECHANICAL ENGINEERING(MANUFACTURING)	PDPU GANDHINAGAR	
5	150610119001	CHELANI KULDIP KANAIYALAL	9601727071	ME MECHANICAL ENGINEERING (PRODUCTION ENGINEEING)	MERCHANT ENGINEERING COLLEGE VISNAGAR	

No of students turned entrepreneur in engineering/technology (Z)

LYG – CAYm1 2019-20 (Admission year 2016-17)				
Sr.	**Enrollment.**	**Student name**	**Contact No of**	**NAME OF TRADE**
1	170613119010	Panchal Rushabh Amratbahi	8758291997	AMP Forging

LYGm1 – CAYm2 2018-19 (Admission year 2015-16)				
Sr.	**Enrollment.**	**Student name**	**Contact No of**	**NAME OF TRADE**
1	160613119009	PANCHAL HARSHADKUMAR	9429562756	BLACKSMITH

LYGm2 – CAYm3 2017-18 (Admission year 2014-15)				
Sr. No.	**Enrollment. No.**	**Student name**	**Contact No of student**	**NAME OF TRADE**
1	140610119018	GOSAI HARSH BHARATGIRI	8905445005	URBAN WORLD(Online shopping web)
2	150613119006	PATEL DHRUV DINESHKUMAR	8469736283	D-ICON IT SOLUTION

4.6 Professional Societies and Organizing Engineering Events

4.6.1 List of Organizing Engineering Events

Government Engineering College Palanpur organizes state level technical event under the banner of **PRAXES** every year.

4.6.1.1 List of Organizing Engineering Events in CAY (2020-21)

Due to COVID 19 PANDEMIC the event was not conducted.

4.6.1.1 List of Organizing Engineering Events in CAYm1 (2019-2020)

For the Academic Year 2019-20 this event was scheduled on 26th & 27th March 2020 but due to COVID 19 PANDEMIC this event has been canceled.

Event Banner

4.6.1.2 List of Organizing Engineering Events in CAYm2 (2018-2019)

Table 4.6.1.2 List of Organizing Engineering Events in CAY m2 (2018-2019)

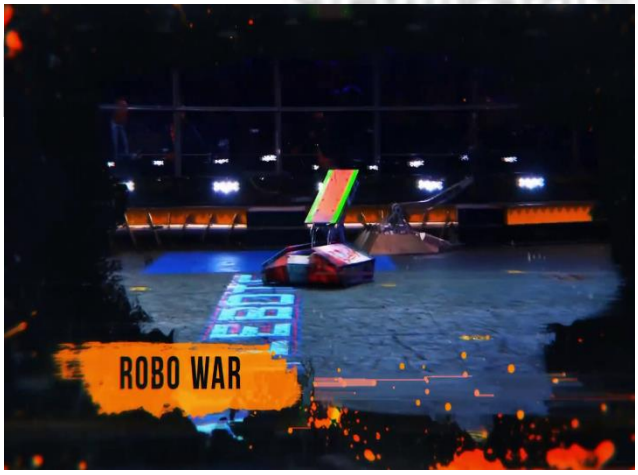
Sr. No.	Organized Event and Title	Organized Period	No. of Participants /Attendees	No. of Days
1	state level technical event under the banner of **PRAXES**	**28th Feb & 1st March**	**1044**	**2**

Event Wise Participations

TOTAL NUMBER OF COLLEGES PARTICIPATED: 18

ROBOTICS	93
TECHNICAL WORKSHOP	510
PROJECT EXHIBITION	36
QUIZ	348
ONE MINUTE GAME	57
TOTAL PARTICIPANTS	**1044**

Event Gallery



4.6.2 Publication of Technical Magazines, Newsletters

Table 4.6.2.1 List of Publication of Newsletters

Year	Name of Publication of Newsletter	Month of Publication
2018-19	Mech at a Glance (E- News Letter) Issue-1	January 2019 (On Institute Website)
2018-19	Mech at a Glance (E- News Letter) Issue-2	July 2019 (On Institute Website)
2019-20	Mech at a Glance (E- News Letter) Issue-1	January 2020 (On Institute Website)
2019-20	Mech at a Glance (E- News Letter) Issue-2	July 2020 (On Institute Website)
2020-21	Mech at a Glance (E- News Letter) Issue-1	January 2021 (On Institute Website)
2020-21	Mech at a Glance (E- News Letter) Issue-2	July 2021 (On Institute Website)

4.6.3 Participation in Inter-Institute Events by Students of the program of study

Details of participation in Inter-Institute Technical/Non-Technical Events by Students for 2020-21

Due to covid-19 pandemic almost in all the organizations, Inter-Institute Technical/Non-Technical Events were canceled during the academic year 2020-21. Hence no students were able to Participate in Inter-Institute Technical/Non-Technical Events.

Details of participation in Inter-Institute Events by Students for 2018-19 and 2019-20 are tabulated below:

Sr. No.	Enrollment Number	Name of Student	Name of Event	Place	Date	Outcome
1	150610119014	KISLAY DAS	AUTOMATIVE INDUSTRY SIMULATON INTERNSHIP	JSS ACADEMY OF TECHNICAL EDUCATION, BENGALURU	20TH JAN-27TH JAN 2018	BEST INTERN AWARD
2	160610119012	GURJAR SAMAY P.	ALL INDIA ESSAY WRITING EVENT 2018	SHRI RAM CHANDRA MISSION UN INFORMATION CENTER	2018	HONORABLE MENTION AMONG ALL ENTRIES.
3	160610119032	PATEL DHAVAL S	TECHFEST VEYG-2K18 (QUANTICO 2.0)	SPB PATEL ENGG. COLLEGE, MEHSANA	14-15 FEB 2018	1ST RANK
4	160610119054	SHUBHAM KUMAR	TWO DAY NATIONAL LEVEL WORKSHOP ON MIND CONTROLLED ROBOT	MSU, BAROD	23RD – 24TH FEB 2018	OUTSTANDING PERFORMANCE
5	170610119003	CHAUDHARY JIGARKUMAR N	ALL INDIA INTER ENGG. SPORTS TOURNAMENT IGNIS 2018 (HAND BALL)	SVNIT SURAT	6TH TO 8TH APRIL 2018	1ST RANK
6	170610119031	PATEL BRIJ	JUNK YAARD (TECHXETRA 2020)	HANSABA COLLEGE OF ENGG., SIDDHAPUR (GGU)	17TH – 18TH FEB 2020	2ND RANK
7	170610119032	PATEL HARSHIL	JUNK YAARD (TECHXETRA 2020)	HANSABA COLLEGE OF ENGG., SIDDHAPUR (GGU)	17TH – 18TH FEB 2020	2ND RANK
8	170610119032	PATEL HARSHIL	PUBG-MOBILE (TECHXETRA 2020)	HANSABA COLLEGE OF ENGG., SIDDHAPUR (GGU)	17TH – 18TH FEB 2020	2ND RANK
9	170610119036	PATEL MITUL	TECHXETRA (JUNK-YARD)	HANSABA COLLEGE OF ENGINEERING (GGU) SIDDHPUR	17TH – 18TH FEB 2020	2ND RANK

10	170610119053	RUPESH KUMAR SINGH	TWO DAY NATIONAL LEVEL WORKSHOP ON MIND CONTROLLED ROBOT	MSU, BAROD	23RD – 24TH FEB 2018	OUTSTANDING PERFORMANCE
11	190610119010	CHAUHAN RAVI KAMLESHBHAI	GUJARAT SCIENCE CARNIVAL 2018	SANKALCHAND PATEL COLLEGE OF ENGG., VISNAGAR	25-26 JAN 2018	CERTIFICATE OF APPRECIATION
12	190610119048	RAJPUT BRIJESHKUMAR	PRAKRUSHT 2019	SMT. S. R. PATEL ENGG. COLLEGE, UNJHA	9TH & 10TH SEP 2019	1ST RANK
13	190610119050	RAVAL KULDEEP	PRAKRUSHT 2019	SMT. S. R. PATEL ENGG. COLLEGE, UNJHA	9TH & 10TH SEP 2019	1ST RANK

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CRITERION 5	Faculty Information and Contributions	200

5. FACULTY INFORMATION AND CONTRIBUTIONS (200)

Table 5.1 Cumulative Faculty Information for the Assessment Years

Annexure – II Faculty Information and Contributions

Sr. No.	Name of the Faculty Member	Qualification			Association with the Institution	Designation	Date on which Designated as Professor/ Associate Professor	Date of Joining the Institution	Department	Specialization	Academic Research			Currently Associated (Y/N) Date of Leaving (In case Currently Associated is ("No")	Nature of Association (Regular/Contract)
		Degree (highest degree)	University	Year of Attaining Higher Qualification							Research Paper Publications	Ph.D. Guidance	Faculty Receiving Ph.D. during the Assessment Years		
1	Dr.K.B.Judal	PhD Mechanical	MNNIT ALLAHABAD	09-09-2013	1-4-2017	Principal	1-4-2017	1-4-2017	Mechanical	Manufacturing Science	4	1(c) 6(0)	NO	Y	Regular
2	Dr.Jeetendrakumar Arjunbhai Vadher	PhD Mechanical	HNGU Patan	09-11-2009	23-12-2015	Professor	18-12-2015	23-12-2015	Mechanical	Manufacturing Engineering	16	4(c) 6(o)	NO	Y	Regular

3	Patel Alpeshkumar Bipinbhai	ME Mechanical	Birla Institute Of Technology, Ranchi	30-07-2012	10-12-2013	Assistant Professor		10-12-2013	Mechanical	Heat Power	0	0	NO	Y	Regular
4	Patel Vijaykumar Dasharathlal	ME	M.S	27-08-2003	16-6-2016	Assistant Professor		16-6-2016	Mechanical	Jet Propulsion and Gas Turbine Plants	0	0	NO	Y	Regular
5	Patel Narendrakumar Amrutlal	M. Tech. Mechanical CAD/CAM	Ganpat University, Kherva	14-10-2009	9-5-2011	Assistant Professor		9-5-2011	Mechanical	CAD/CAM	0	0	NO	Y	Regular
6	Patel Ashvinkumar Dahyabhai	ME	SP	15-12-2009	21-4-2011	Assistant Professor		21-4-2011	Mechanical	Machine Design	0	0	NO	Y	Regular
7	Chaudhari Ashokkumar Ramjibhai	ME	Sardar Patel University, Vidhyanagar	31-03-2010	21-4-2011	Assistant Professor		21-4-2011	Mechanical	Machine Design	0	0	NO	Y	Regular
8	Pradeepkumar Narsinhbhai Boka	M.Tech Mechanical	IIT, Bombay	08-08-2015	19-4-2011	Assistant Professor		19-4-2011	Mechanical	Design Engineering	0	0	NO	Y	Regular
9	Patel Anandkumar Knaubhai	M.Tech Mechanical (AMT)	Ganpat University, Kherva	17-10-2008	4-2-2012	Assistant Professor		4-2-2012	Mechanical	Advanced Manufacturing Techniques	0	0	NO	Y	Regular

10	Prof.N.T.Raval	ME Mechanical CAD/CAM	Gujarat Technological University, Ahmedabad	05-08-2013	23-10-2013	Assistant Professor		23-10-2013	Mechanical	CAD/CAM	0	0	NO	Y	Contract
11	Patel Kaushik Kumar Vishnubhai	ME	Sardar Patel University, Vidhyanagar	12-06-2007	30-04-2011	Assistant Professor		30-04-2011	Mechanical	Machine Design	0	0	NO	05-12-018	Regular
12	Dabhi Shyam K	ME	Gujarat University, Ahmedabad	21-09-2006	21-08-2020	Assistant Professor		21-08-2020	Mechanical	IC/Auto	0	0	NO	Y	Regular
13	Patel Vaishali Kalpeshkumar	ME	Sardar Patel University, Vidhyanagar	23-04-2009	21-08-2020	Assistant Professor		21-08-2020	Mechanical	Machine Design	0	0	NO	Y	Regular

5.1 Student-Faculty Ratio (SFR) (20)

No. of UG Programs in the Department (n) : 01
No. of PG Programs in the Department (m) : 00
No. of Students in UG 2nd Year= U 1.1 = 96
No. of Students in UG 3rd Year = U 1.2 = 67
No. of Students in UG 4th Year = U 1.3 = 74
No. of Students in PG 1st Year = 00
No. of Students in PG 2nd Year= 00
No. of Students = Sanctioned Intake + Actual admitted lateral entry students
S = Number of Students in the Department = UG1 + PG1 + PG2 +PG3 = 237
F = Total Number of Faculty Members in the Department (excluding first year faculty) =12

Table 5.1.1 Calculation of SFR for the three academic years

Year	CAY (2020-21)	CAYm1 (2019-20)	CAYm2 (2018-19)
U1.1	96	67	74
U1.2	67	74	75
U1.3	74	75	75
Ug1		216	224
Total number of students in Department (S)	237	216	224
Total number of Faculty in Department (F)	**12**	**10**	**10**
Student Faculty ratio(SFR)	SFR4 = S4/F4= 19.75	SFR1 = S1/F1 = 21.60	SFR2 = S2/F2= 22.40
Average SFR		**21.25**	

Note: Marks to be given proportionally from a maximum of 20 to a minimum of 10 for average SFR between 15:1 to 25:1, and zero for average SFR higher than 25:1. Marks distribution is given as below:

< = 15 - 20 Marks
< = 17 - 18 Marks
< = 19 - 16 Marks
< = 21 - 14 Marks
< = 23 - 12 Marks
< = 25 - 10 Marks
> 25.0 - 0 Marks

All the 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:

1. Shall have the AICTE prescribed qualifications and experience.
2. Shall be appointed on full time basis and worked for consecutive two semesters during the particular academic year under consideration.
3. 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 5.1.1.1 Details about regular and contractual faculty members

	Total number of regular faculty in the department	Total number of contractual faculty in the department
CAY(2020-21)	11	01
CAYm1(2019-20)	09	01
CAYm2(2018-19)	09	01

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 × 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 × Department 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 × 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 ratio

Year	Professors		Associate professors		Assistant Professors	
	Required F1	Available	Required F2	Available	Required F3	Available
CAY (2020-21)	1	2	3	0	8	9
CAYm1 (2019-20)	1	2	2	0	7	7
CAYm2 (2018-19)	1	2	2	0	7	7
Average Number	RF1= 1	AF1=2.00	RF2=2.33	AF2=0.00	RF3=7.33	AF3=7.66

Cadre Ratio = [(AF1/RF1) + (AF2/RF2)*0.6 + (AF3/RF3)*0.4]*12.5 =30.22 ≈ 25 Marks

If AF1 = AF2= 0 then zero marks
Maximum marks to be limited if it exceeds 25
Example: Intake = 60 (i.e. total no. of students= 180); Required number of Faculty: 9; RF1= 1, RF2=2 and RF3=6

5.3 Faculty Qualification (25)

FQ =2.5 × [(10X +4Y)/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

Year	X	Y	F	FQ = 2.5 × [(10X +4Y)/F)]
CAY (2020-21)	2	10	**11.85**	**12.65**
CAYm1 (2019-20)	2	8	10.80	12.04
CAYm2 (2018-19)	2	8	11.20	11.61
Average Number				12.10

$$FQ1 = 2.5 \text{ x } \left[\frac{(10\ X + 4\ Y)}{F}\right] = 2.5 \text{ x } \left[\frac{(10\ (2) + 4\ (10))}{11.85}\right] = 12.65$$

$$FQ1 = 2.5 \text{ x } \left[\frac{(10\ X + 4\ Y)}{F}\right] = 2.5 \text{ x } \left[\frac{(10\ (2) + 4\ (8))}{10.8}\right] = 12.04$$

$$FQ1 = 2.5 \text{ x } \left[\frac{(10\ X + 4\ Y)}{F}\right] = 2.5 \text{ x } \left[\frac{(10\ (2) + 4\ (8))}{11.2}\right] = 11.61$$

Average Number = (FQ1+FQ2+FQ3)/3 = (12.65+12.04+11.61)/3 =**12.10**

5.4 Faculty Retention (25)

No. of regular faculty members in
CAY*m2*(2018-19) = 09
CAY*m1* (2019-20) = 09
CAY (2020-21) = 11

Item (% of faculty retained during the period of assessment keeping CAYm2 as base year)	**Marks**
>=90% of required Faculty members retained during the period of assessment keeping CAYm2 as base year)	25
>=75% of required Faculty members retained during the period of assessment keeping CAYm2 as base year)	20
>=60% of required Faculty members retained during the period of assessment keeping CAYm2 as base year)	15
>=50% of required Faculty members retained during the period of assessment keeping CAYm2 as base year)	10
<50% of required Faculty members retained during the period of assessment keeping CAYm2 as base year)	0

Table 5.4.1 Faculty retention

	Total No of Faculty	**No of Faculty Retained (base year2018-19)**	**% retention in year.**
CAY(2020-21)	12	11	92%
CAYm1(2019-20)	10	09	90%
CAYm2(2018-19)	10	09	90%
Average retention			90.67%
Average retention = 90.00% (>=90%)			25 Marks

Faculty Details CAY*m*2(2018-19)

Sr. No.	Name	PAN No.	Qualification	Area of Specilization	Designation	Date of Joining	Date on which Designated as Prof/Asso. Prof	Currently Associated (Y/N)	Nature of Association (Regular /Contract/ Adjunct)	Date of Leaving (In Case Currently Associated is "No")
1	Prof K B Judal	AEGPJ9305M	Ph.D	Hybrid Machining and Finishing	Principal	01-04-2017	01-04-2017	Y	Regular	
2	Prof. J A Vadher	ABQPV0324H	Ph.D.	Manufacturing Engineering	Professor	23-12-2015	23-12-2015	Y	Regular	
3	Prof. A B Patel	AGZPP4336M	ME-Mechanical	Heat Power	Assistant Professor	10-12-2013	NA	Y	Regular	
4	Prof. V D Patel	AKUPP0991R	ME-Mechanical	JP&GTP	Assistant Professor	16-06-2016	NA	Y	Regular	
5	Prof. N A Patel	ALWPP2508D	M. Tech. Mechanical	CAD/CAM	Assistant Professor	09-05-2011	NA	Y	Regular	
6	Prof. K V Patel	AOOPP5262R	ME-Mechanical	Machine Design	Assistant Professor	30-04-2011	NA	N	Regular	05-12-2018
7	Prof. A D Patel	AQMPP4778J	ME-Mechanical	Machine Design	Assistant Professor	21-04-2011	NA	Y	Regular	
8	Prof. A. R. Chaudhari	AHHPC5872A	ME-Mechanical	Machine Design	Assistant Professo	21-04-2011	NA	Y	Regular	

					r					
9	Prof. P. N. Boka	ATGPB0295D	M. Tech. Mechanical	Design Engineering	Assistant Professor	19-04-2011	NA	Y	Regular	
10	Prof. A. K. Patel	ATWPP7541E	M. Tech. Mechanical	Advanced Manufacturing Techniques	Assistant Professor	04-02-2012	NA	Y	Regular	
11	Prof. N T Raval	BJAPR5290K	ME-CAD/CAM	CAD/CAM	Assistant Professor	21-10-2013	NA	Y	Contract	

Faculty Details CAY*m1* (2019-20)

Sr. No.	Name	PAN No.	Qualification	Area of Specialization	Designation	Date of Joining	Date on which Designated as Prof/Asso. Prof	Currently Associated (Y/N)	Nature of Association (Regular /Contract/ Adjunct)	Date of Leaving (In Case Currently Associated is "No")
1	Prof K B Judal	AEGPJ9305M	Ph.D	Hybrid Machining and Finishing	Principal	01-04-2017	01-04-2017	Y	Regular	
2	Prof. J A Vadher	ABQPV0324H	Ph.D.	Manufacturing Engineering	Professor	23-12-2015	23-12-2015	Y	Regular	
3	Prof. A B Patel	AGZPP4336M	ME-Mechanical	Heat Power	Assistant Professor	10-12-2013	NA	Y	Regular	
4	Prof. V D Patel	AKUPP0991R	ME-Mechanical	JP&GTP	Assistant Professor	16-06-2016	NA	Y	Regular	
5	Prof. N A Patel	ALWPP2508D	M. Tech. Mechanical	CAD/CAM	Assistant Professor	09-05-2011	NA	Y	Regular	

6	Prof. A D Patel	AQMPP4778J	ME-Mechanical	Machine Design	Assistant Professor	21-04-2011	NA	Y	Regular	
7	Prof. A R Chaudhari	AHHPC5872A	ME-Mechanical	Machine Design	Assistant Professor	21-04-2011	NA	Y	Regular	
8	Prof. P N Boka	ATGPB0295D	M. Tech. Mechanical	Design Engineering	Assistant Professor	19-04-2011	NA	Y	Regular	
9	Prof. A. K. Patel	ATWPP7541E	M. Tech. Mechanical	Advanced Manufacturing Techniques	Assistant Professor	04-02-2012	NA	Y	Regular	
10	Prof. N T Raval	BJAPR5290K	ME-CAD/CAM	CAD/CAM	Assistant Professor	21-10-2013	NA	Y	Contract	
11	Prof N A Modi	BHAPM2777E	ME-Mechanical	Production	Lecturer	12-03-2019	NA	N	Regular	20-08-2019
12	Prof S R Modi	BHOPM3657H	ME-Mechanical	Energy	Lecturer	12-03-2019	NA	N	Regular	20-08-2019
13	Prof N N Chaudhary	AXNPC2276J	ME-Mechanical	CAD/CAM	Lecturer	12-03-2019	NA	N	Regular	20-08-2019

Faculty Details CAY (2020-21)

Sr. No.	Name	PAN No.	Qualification	Area of Specilization	Designation	Date of Joining	Date on which Designated as Prof/Asso. Prof	Currently Associated (Y/N)	Nature of Association (Regular /Contract/ Adjunct)	Date of Leaving (In Case Currently Associated is "No")
1	Prof K B Judal	AEGPJ9305M	Ph.D	Hybrid Machining and Finishing	Principal	01-04-2017	01-04-2017	Y	Regular	
2	Prof. J A Vadher	ABQPV0324H	Ph.D.	Manufacturing Engineering	Professor	23-12-2015	23-12-2015	Y	Regular	

3	Prof. A B Patel	AGZPP4336M	ME-Mechanical	Heat Power	Assistant Professor	10-12-2013	NA	Y	Regular	
4	Prof. V D Patel	AKUPP0991R	ME-Mechanical	JP&GTP	Assistant Professor	16-06-2016	NA	Y	Regular	
5	Prof. N A Patel	ALWPP2508D	M. Tech. Mechanical	CAD/CAM	Assistant Professor	09-05-2011	NA	Y	Regular	
6	Prof. A D Patel	AQMPP4778J	ME-Mechanical	Machine Design	Assistant Professor	21-04-2011	NA	Y	Regular	
7	Prof. A R Chaudhari	AHHPC5872A	ME-Mechanical	Machine Design	Assistant Professor	21-04-2011	NA	Y	Regular	
8	Prof. P N Boka	ATGPB0295D	M. Tech. Mechanical	Design Engineering	Assistant Professor	19-04-2011	NA	Y	Regular	
9	Prof. A. K. Patel	ATWPP7541E	M. Tech. Mechanical	Advanced Manufacturing Techniques	Assistant Professor	04-02-2012	NA	Y	Regular	
10	Prof. N T Raval	BJAPR5290K	ME-CAD/CAM	CAD/CAM	Assistant Professor	21-10-2013	NA	Y	Contract	
11	Dabhi Shyam K	ALVPD7333B	ME-Mechanical	IC/Auto	Assistant Professor	21-08-2020	NA	Y	Regular	
12	Patel Vaishali Kalpeshkumar	AUNPP5174H	ME-Mechanical	Machine Design	Assistant Professor	21-08-2020	NA	Y	Regular	

5.5. Innovation by faculty in teaching and learning:

- Using modern teaching aids like multimedia projector (LCD), internet enable computer systems, faculty members try to represent content with very meaningful way.
- Series of Expert talk on various topics are arranged for the students by renowned entrepreneur to bridge the gap between academic and industries.
- Faculty members and students are utilizing NPTEL video lectures and Live telecast of online video lectures by BISAG to enhance their knowledge in different facet.
- The faculty members are encouraged to participate in faculty development program, short term courses, webinar, and workshops on latest topics to cultivate their technical knowledge and skills.
- The faculty members participate/present papers in national/international conferences and publish their articles in national/international journals.
- Students of GEC Palanpur Mechanical have been sent to COE-welding, Keepsake technology, LDCE Ahmadabad for practical exposure and make aware about latest technology.
- License version of MATLAB which integrates computation, visualization, and programming in an easy-to-use environment where problems and solutions are expressed in familiar mathematical notation.
- Industrial visits are arranged for students to develop practical knowledge as well as to keep them in touch with the latest technology used by the industries.
- By using Virtual Lab students are performing practical by modelling, simulation and able to solve assignment.
- Innovative activity in Industrial Engineering subject, Workshop layout planning and implementation with 5S.

5.6. Faculty as participants in faculty development / training activities/ STTP's

- A faculty scores maximum five points for participation
- Participation in 2 to 5 days Faculty development program: 3 Points
- Participation > 5 days Faculty development program: 5 points

Table 5.6.1 List of faculty member participated in faculty development / training activities STTP's

Name of the Faculty	**Max. 5 per Faculty**		
	2017-18	2018-19	2019-20
	CAYm3	CAYm2	CAYm1
Dr.K.B.Judal	0	0	0
Dr.J.A.Vadher	0	0	3
Prof.A.B.Patel	3	3	0
Prof.V.D.Patel	3	3	5
Prof.N.A.Patel	5	3	3
Prof.A.D.Patel	5	5	5
Prof.A.R.Chudhary	5	5	5
Prof.P.N.Boka	5	5	3
Prof.A.K.Patel	3	3	5
Prof.N.T.Raval	3	0	0
Prof.K.V.Patel	5	0	0
Prof.S.K.Dabhi	-	-	-
Prof.V.K.Patel	-	-	-
SUM	37	27	29
RF= Number of Faculty required to comply with 20:1 Student-Faculty ratio as per 5.1	11	11	11
Assessment = 3 × (Sum/0.5RF)	20.18	14.72	15.81
Average assessment over three years (Marks limited to 15)			16.90 = 15

5.7 Research and Development

5.7.1 Academic Research

Table 5.7.1.1 Publication Details by faculty members of the department

Academic year	**CAYm2** (2018-19)	**CAYm1** (2019-20)	**CAY 2020-21**
No. of publications	5	2	6
Books Published/ Chapters authored	0	1	0
No. of Patent Applied/Published	0	0	3

5.7.1.2 List of paper publications by faculty for the past three Academic Years (2018-2020)

Sr. No	Name of Faculty	Publication Title	Journal name, Vol. No., issue, Pg. No.	ISSN/ISBN	Month/Year	Index in SCI/Scopus/UGC	Current Impact Factor
1	Dr.K.B.Judal	Fabrication of Aluminum Based Hybrid Metal Matrix Composite Using Stircasting Technique	JASC: Journal of Applied Science and Computations, Volume V, Issue XII, pp 666-672	1. ISSN NO: 1076-5131.	2018	UGC-41238	-
2	Dr.K.B.Judal	Recent Advances in Dissimilar Friction Stir Welding of Aluminum to magnesium alloys	Materials Today: Proceedings, Issue 22(4), pp 2665–2675,	-	2020	Scopus	0.576
3	Dr.K.B.Judal	A Review on residual stress in friction stir welding: causes, measuring techniques, nature of distributions, consequences and control	Gujarat Technological University International Conference, ICON-2019	-	14-16 March-2019	-	-
4	Dr.K.B.Judal	Experimental Investigation On Natural Fibers Composite For Sustainable Development	International Conference on Advances in Power Generation from Renewable Energy Sources (APGRES-2019)	-	2019	-	-
5	Dr.Jeetendrakumar Arjunbhai Vadher	Experimental Study of Heat Transfer in Conical Tube Heat Exchanger	International Journal of Engineering Research and Technology (IJERT)	ISSN 09743154	active in 2019	-	-
6	Dr.Jeetendrakumar Arjunbhai Vadher	Investigation & Optimization of Process Parameters of Roll Bending machine in realizing Conical Shells in Aluminum 6063	International Conference, Frontiers Materials Processing Applications, Research and technology at INDUS, Ahmedabad		15 to 18 Dec-2019	-	-
7	Dr.Jeetendrakumar Arjunbhai Vadher	The heat transfer enhancement techniques and their	Beni-Suef UniversityJournal of Basic and Applied Sciencesjournal homepage:		2018	Springer	-

		ThermalPerformance Factor	www.elsevier.com/locate/bjbas				
8	A D Patel	Innovative Multicutter Groove Cutting Machine For Development of a Novel Cruci-Trap Joint	Science, Technology and Development Journal, Vol 10, Issue 5, pp. 515-527	ISSN : 0950-0707	May 2021	UGC	6.1
9	A R Chaudhari	Experimental investigation of electro-chemical magnetic abrasive finishing of SS 304 workpiece	https://doi.org/10.1016/j.matpr.2021.02.295	2214-7853	March-2021	Scopus Indexed	1.24
10	Prof. N. A. Patel	Performance Assessment Of Cutting Tools–A Review	International Journal of Advanced Research in Education & Technology Volume 11, Issue 12	0976-6480	Dec-2020	Scopus	1.119
11	Prof. N. A. Patel	Cantilever Beam Analogy for the Performance Assessment of Cutting Tools	International Journal for Research in Engineering Application & Management Volume-07, Issue-01	2454-9150	Apr-2021	UGC	6.466
12	Prof. N. A. Patel	An Experimental Investigation On The Performance Of Cutting Tool Under Vibration Behavior With Variable System Parameters	International Journal Of Creative Research Thoughts Volume 9, Issue 5	2320-2882	May-2021	-	7.97
13	Prof. N. A. Patel	Implementation of Adaptive Control for Cutting Tool Vibration Minimization	International Journal for Research in Engineering Application & Management Volume-07, Issue-02	2454-9150	May-2021	UGC	6.466

Table 5.7.1.2 Ph.D. guided /Ph.D. awarded during the assessment period while working in the Institute

Ph.D. Guided	No. of Ph.D. awarded
12	06

Table 5.7.1.2.a Ph.D. guided/under guidance by Faculty

Name of Faculty	Name of Student	University	Year of Completion
Dr.K.B.Judal	Ketul Brahmbhatt	Rai University	2020
Dr.J.A.VADHER	Shailee Acharya	R.K.University	2017
Dr.J.A.VADHER	B.M.Trivedi	Rai University	2017
Dr.J.A.VADHER	Priyank Parekh	R.K.University	2020
Dr.J.A.VADHER	Rita Jani	GTU	2020
Dr.J.A.VADHER	Chirag Maradiya	GTU	2020

Table 5.7.1.2.b Ph.D. guided/under guidance by Faculty

Sr. No.	Name of Faculty Guide	Name of Student	Year of Entry	Title	Status
1	Dr.K.B.Judal	Ketul Brahmbhatt	2013	Investigation of fatigue and tribological properties of newly developed bio-degradable natural fibre composites	Completed

2	Dr.K.B.Judal	Nehal Joshi	2013	Experimental Investigations of WEDM during machining of Hybrid MMCs	In process
3	Dr.K.B.Judal	Samir K. Raval	2018	Experimental Investigations And Optimization Of Fsw Of Dissimilar Alloys (Al-Mg)	In process
4	Dr.K.B.Judal	Ashok R. Chaudhary	2018	Experimentation And Simulation Of Electro-Chemical Magnetic Abrasive Finishing	In process
5	Dr.K.B.Judal	G. D. Mistry	2018	Evaluation And Development Of Analytical Model For Estimation Of Roll Separating Force In Bar Rolling Process	In process
6	Dr.K.B.Judal	N. N. Chaudhary	2018	Magnetic Abrasive Finishing of Free Form surfaces using Bonded MAPs	In process
7	Dr.K.B.Judal	Vijay. D. Patel	2019	In the field of Solar Thermal Efficiency	In process
8	Dr.J.A.VADHER	Shailee Acharya	2011	Evaluate Furan No-Bake System for Quality Casting and Environmental Aspect.	Completed
9	Dr.J.A.VADHER	B.M.Trivedi	2012	Modeling Analysis and Dynamic Simulation of Centrifugal Compressor for Process Industry.	Completed
10	Dr.J.A.VADHER	Priyank Parekh	2011	Minimizing the sand casting defects by predicting and Analyzing the process parameters	Completed
11	Dr.J.A.VADHER	Chirag Maradiya	2013	Analysis of heat transfer in conical shell and circular tube heat exchanger.	Completed
12	Dr.J.A.VADHER	Narendra Patel	2014	Condition Monitoring Machine tools	Submitted
13	Dr.J.A.VADHER	Rita Jani	2014	Sustainability in Manufacturing Process in Steel Re-Rolling mills.	Completed
14	Dr.J.A.VADHER	Anand Kalani	2015	Gear Tooth Failure Analysis	In Process
15	Dr.J.A.VADHER	Mehul Mehta	2015	Metal Matrix Alloys	In Process
16	Dr.J.A.VADHER	Nimesh Soni	2017	Cloud design and manufacturing	In Process

17	Dr.J.A.VADHER	Nimesh Patel	2017	Sheet metal working	In Process
18	Dr.J.A.VADHER	Meeta P Chauhan	2020	Internet of Things and Energy Optimization	In Process

Patent Published

- Patel Ashvinkumar Dahyabhai, Shah Pratik H., "Multicutter Groove Cutting Machine (MGCM)" 202121012147, Applied on 22/3/21, Published on 26/3/2021
- Patel Ashvinkumar Dahyabhai, Shah Pratik Harshadbhai, "Two-Piece Plus Type Cruci-Trap Welded Joint (CTWJ)", 202121022448,Applied on 19/5/21, Published on 25/6/2021
- Shyam K. Dabhi "Eco Green Titanium Dioxide Photolytic Catalytic Converter", 202121002423, Published on 12/02/2021.

5.7.2 Sponsored Research

Table 5.7.2.1 Details of funded Project

Sr. No.	Project title	Funding Agency	Amount	Principal Investigator	Duration	Year of sanction
1	Performance Improvement and Investigation of Magnetic Abrasive finishing Process	SSIP Government of Gujarat	51,500	Prof A. R. Chaudhari	-	2019
2	Automated waste storage and transportation system for waste disposal	SSIP Government of Gujarat	36,500	Prof. N. A. Patel	-	2019
3	Rough terrain robot using rocker bogie mechanism	SSIP Government of Gujarat	17,600	Prof. P. N. Boka	-	2019
4	Swatch bharat abhiyan reverse vending machine	SSIP	85000	Ashvin D. Patel	1.5y	2021

5.7.3. Developmental Activities

Table 5.7.3.1 Developmental Activities academic year 2018-19

	Name of faculty	Working models/charts/monograms
1	Prof.N.A.PATEL	Spot Welding Robot
2	Prof.A.K.Patel	Sheet Metal Cutting Machine (Pneumatic Powered)
3	Prof.N.A.PATEL	Design And Development Of Tmt Bar Bending Machine

Table 5.7.3.2 Developmental Activities academic year 2019-20

No.	Name of faculty	Working models/charts/monograms
1	Prof.A.K.Patel	Manual Hydraulic Press (Model)
2	Prof.A.K.Patel	Comparators (Chart-MMM Lab)
3	Prof.A.R.Chaudhari	Magnetic Abrasive Machine

Table 5.7.3.3 Developmental Activities academic year 2020-21

No.	Name of faculty	Working models/charts/monograms
1	Prof.A. D. Patel	Multi-cutter Groove Cutting Machine
2	Prof.A. D. Patel	SBA Reverse Vending Machine
3	Prof. P.N.Boka	Solar Desalination model

5.7.4. Consultancy (from Industry)

Funding amount (Cumulative amount during last three academic years starting from CAYm1):
Amount > 10 lacs - 5 Marks
Amount >= 8 lacs and <=10 lacs -4 Marks
Amount >= 6 lacs and <8 lacs -3 Marks
Amount >= 4 lacs and <6 lacs -2 Marks
Amount >= 2 lacs and <4 lacs -1 Mark
Amount < 2 lacs -0 Marks

Type	Company Name	Details of Work	Faculty In-charge	Total Amount	Date
Anand Mela	Ronak Amusement Park	Ride approval	A D Patel	8,000	23/10/2019
Vrundavan Gram Yojana	DRDA (District Rural Development Agency) Palanpur	Infrastructural development of villages covered under Vrundavan Gram Yojana	N A Patel (Mechanical Engineering Department) H U Patel (Civil Engineering Department)	14,00,000	January,2019
Cumulative funding amount is **Rs. 14,08,000/-**					

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

Faculty Performance Appraisal Report (PAR) is collected from every faculty members on annual basis. Till 2018-2019 PAR were filled physically and later evaluated by designated authority, from 2019-2020 onwards it has been made online. In this report, they need to show the responsibilities they carry, duties performed, STTPs attended and the contribution they have made in the area of research and innovations during the period of appraisal. It mainly includes assessment of work output, assessment of personal attributes and assessment of functional competency. Besides, Appraisal report format incorporates the points related to self-up gradation by conducting research. Research and innovation is necessary for their personal and professional development. Research enables the faculty to gain better subject knowledge; holistic thinking which gradually leads to expertise in the subject. Moreover, research enables them to deal with the continuous modification and changes in technology and effective implementation of curricula.

Furthermore, in present scenario, faculty members of Higher Educational Institutions have to perform duties and responsibilities on various fronts; besides teaching and research, faculty members have to perform administrative duties too. Moreover, they are also expected to provide services to the industry and community for understanding and contributing to the solution of real life problems in industry. Additionally, faculty members have to work in harmony with colleagues, Head of the department and head of the institute. Therefore, an effective performance appraisal system for Faculty is vital for optimizing the contribution of individual Faculty to institutional performance.

ACADEMIC PERFORMANCE INDICATORS-API

CATEGORY-I
TEACHING, LEARNING AND EVALUATION RELATED ACTIVITIES

Lectures, Seminars, Tutorials, Practical, Contact Hours

Reading/Instructional material consulted and additional knowledge resources provided.

Use of Participatory and Innovative Teaching-learning Methodologies, Updating of Subject Content, Course Improvement, etc.

Examination Duties Assigned and Performed

CATEGORY-II
CO-CURRICULAR, EXTENSION, PROFESSIONAL, DEVELOPMENT RELATED ACTIVITIES

Extension Co-curricular & field based activities

Contribution to Corporate Life and Management of the Institution

Professional Development Activities

CATEGORY III
RESEARCH, PUBLICATIONS AND ACADEMIC CONTRIBUTIONS

Published Papers in Journals

Articles / Chapters published in Books

Full Papers in Conference Proceedings

Books Published as single author or as editor

Ongoing and Completed Research Projects and Consultancies

Research Guidance (M.E./M.Tech /Master in appropriate field/ Ph. D. or equivalent)

Training Course, Teaching-Learning-Evaluation Technology Programmes, Faculty Development Programmes (not less than one week duration)

Papers presented in Conferences, Seminars, Workshops, Symposia

Invited Lectures and Chairmanships at national or International conference/seminar etc

Other credential significant contributions/ Awards received, etc. not mention earlier.

Academic Staff College Orientation / Refresher Course attended during the year

The assessment is based on:

1. A well-defined system for faculty appraisal

Being government institution, faculty appraisal system is well defined and transparent. Faculties are required to fill their Performance Appraisal Report (PAR) every year in the month of April. All the PAR are sent to Reporting Officer (Head of Department) for assessment and finally reviewed by Reviewing officer (Principal). After carefully reviewed, it has been shown to candidates to let them know their performance. The reports are then sent to the Commissionerate of Technical Education for further process. After second review by the CTE office, reports of Assistant Professor (class 2) officer are being kept at the same office and reports of Associate Professor, Professor (class 1) officer are sent to the education department. The whole appraisal system is transparent and time bound. For promotion to next higher level, all the PAR (last 5 years PAR) are to be reviewed and all the PAR with comment "very good or higher" are considered to be eligible. PAR is also one of the criteria which are considered for implementation of CAS along with PBAS (Performance Based Appraisal System).
All Career Advance Movement (CAS) is approved and implemented by designated committee authorised by Government of Gujarat as per the guidelines provided by AICTE in its regulations for Pay scales, Service conditions, and Promotions form time to time.

2. Its implementation and effectiveness

Implementation of appraisal system is the key for the motivation for all faculty members of any institute. Being a government owned engineering college all notified AICTE norms published from time to time, and adopted by Education Department, Government of Gujarat regarding recruitment, promotion, pay scale are implemented. Higher posts of Associate Professors and Professors filled by promotions are awarded to current faculty members with requisite qualification and performance and also by direct recruitment through State Public Service Commission. This gives equal opportunity to qualified senior and junior faculty, having experience as per prevailing norms, for getting promoted to higher posts. Also this creates a levelled ground and opportunity for industry and field based professionals to amalgamate in teaching stream which definitely enriches the faculty strength of an institute, and which in turn benefits the student who gets an opportunity to get exposure of faculty with field experience.

A well-defined Appraisal system, established by Government is executed, and all the documents related to the process there in, are kept confidential in Faculty Appraisal Systems.

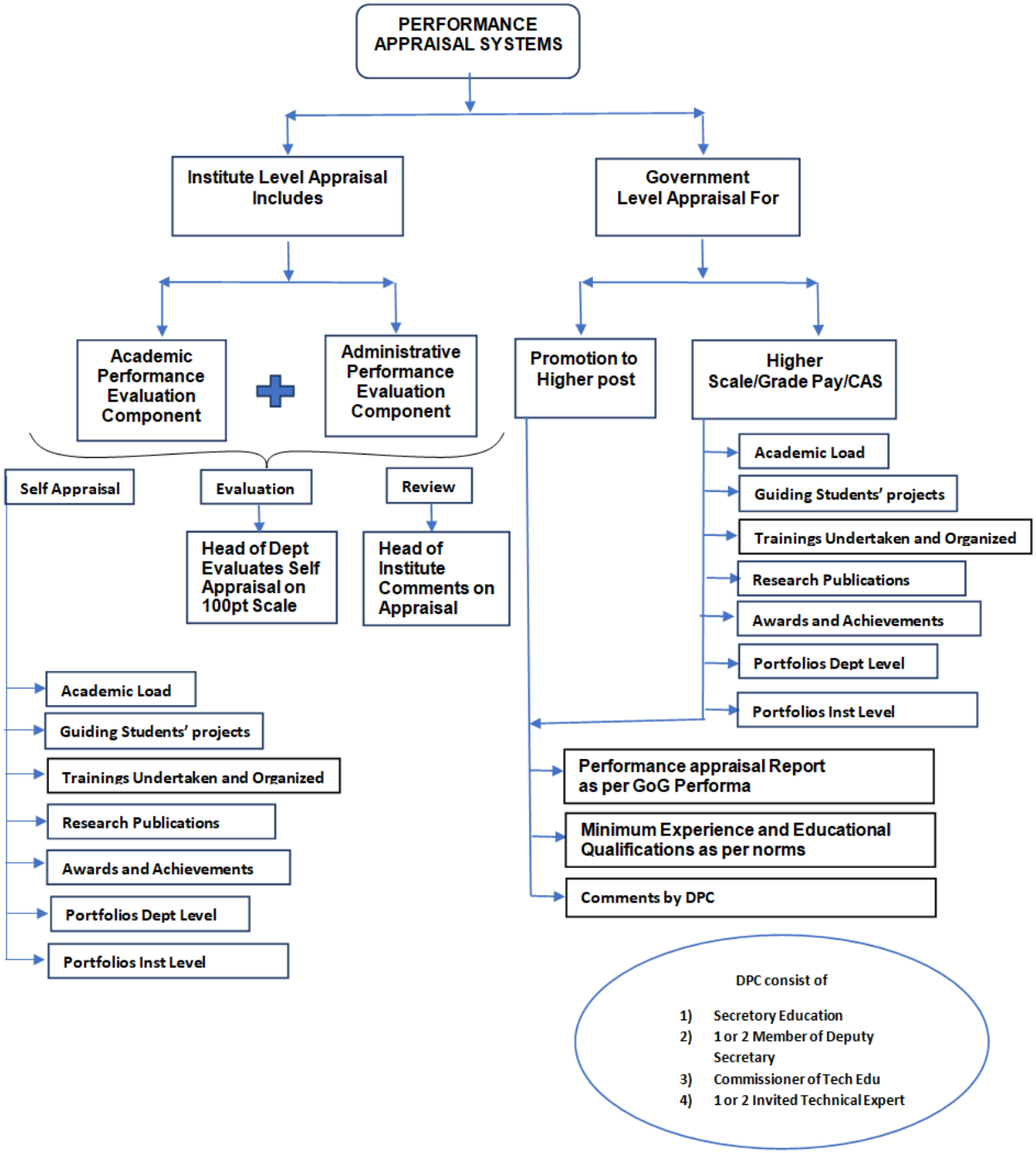

Fig 5.8.1 Performance appraisal system

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

Adjunct faculty also includes Industry experts. Provide details of participation and contributions in teaching and learning and /or research by visiting/adjunct/Emeritus faculty, etc. for all the assessment years:

Provision of inviting/having visiting/adjunct/emeritus faculty (1)
Minimum 50 hours per year interaction with adjunct faculty from industry/retired professors etc. (9)

(Minimum 50 hours interaction in a year will result in 3 marks for that year; 3 marks x 3 years = 9 marks)

Expert Lectures/Seminar Year 2018-19 (Total – 75 Hrs)

Academic Year.	Name of training	Name of Trainer	Start Date	End Date	Total Number of Training hours completed	Total Number of students Benefited	Students of Mechanical Department Benefited
2018-19	Finishing School Program First Phase of 25 hours Batch 09	Dr. Hitesh Patel	28/05/2018	2/06/2018	25	91	39
	Finishing School Program First Phase of 25 hours Batch 12	Dr. Hitesh Patel	2/07/2018	7/07/2018	25	146	36
	Finishing School Program second Phase of 25 hours Batch 12	Ms. Preeti Nakhat	8/10/2018	12/10/2018	25	146	36

Entrepreneurship Development Program Module-II was organized by Government Engineering College, Palanpur from 09-04-2019 to 25/04/2019 in which 20 trainees were benefited. (30 Hrs)

Expert Lectures/Seminar Year 2019-20 (Total – 20 Hrs)

Academic Year.	Name of training	Name of Trainer	Start Date	End Date	Total Number of Training hours completed	Total Number of students Benefited	Students of Mechanical Department Benefited
2019-20	Finishing School Program First Phase of 20 hours Batch 15	Mrs. Vibha Tank	9/12/2019	13/12/2019	20	196	58

Expert Lectures/Seminar Year 2020-21 (Total – 40 Hrs)

Academic Year.	Name of training	Name of Trainer	Start Date	End Date	Total Number of Training hours completed	Total Number of students Benefited	Students of Mechanical Department Benefited
2020-21	Finishing School Program First Phase of 20 hours Batch 19	Dr. Hitesh Patel	15/12/2020	24/12/2020	20	191	55
	Finishing School Program second Phase of 20 hours Batch 19	Dr. Hitesh Patel	10/5/2021	20/05/2021	20	144	39

6. FACILITIES AND TECHNICAL SUPPORT (80)

6.1. Adequate and well equipped Laboratories and Technical Manpower (30)

Table 6.1.1 Details of Laboratories and Technical Manpower

Sr. No	Name of the Laboratory	No. of students per setup (Batch size)	Name of the Important equipment in each laboratory	Weekly utilization status	Technical manpower support		
					Name of the Technical staff	Designation	Qualification
1	Mechanical workshop	20	1.Hydrulic Hacksaw Machine 2.Air Compressor Single Cylinder Single stage 3.Plumbing Demonstration Board 4.Metal Jack Plan 6"/9” 5.Carpentry Wise 6.Fitting Vice 7.Surfce Plate Cast Iron (24×24 inch) 8.Lathe Tool Dynamometer 9.Welding Holder 10.Latogen oxy-Acetylene Torch 11.Oxygen/ Acetylene Regulator 12.Pipe Die set/ Pipe Vice 2" 13.Flat File Bustard/ V-File/ Round File/ Flat Rough File/ Flat Smooth File 14.Angle Grinder 10 mm 15.Hacksaw Frame 16.Hammer 17.Tin Cutter 18.Plastic Hammer 19.Soldring Iron 20.Chiesel/ Scriber 21.Anvil 25kg	As Per Time Table	Tejas Rathi	Store keeper	B.E.
2	Engineering Graphics and Machine Design	20	Models of solid geometry, Geometrical Instrument Box, Black Board Drafter, Plan (H.P. & V.P.) Apparatus showing 4 quadrants, 2. Cotter Joint	As per Time Table	Prof.A.D .Patel	Assistant Professor	M.E.

Sr. No	Name of the Laboratory	No. of students per setup (Batch size)	Name of the Important equipment in each laboratory	Weekly utilization status	Technical manpower support		
					Name of the Technical staff	Designation	Qualification
3	Basic Mechanical Engineering	20	1. Model of Cochran Boiler 2. Model of Lancashire Boiler 3. Model of Babcock & Wilcox Boiler 4. Model of Locomotive Boiler 5. Single stage Helical Gear 6. Single stage spiral Gear 7. Herringbone gear 8. Epicycle Gear 9. Model of Cochran Boiler 10. Models Of 11.Centrifugal pump Models Of 12.Reciprocating pump 13.Rotary pump 14.Disc brake 15.Internal expanding brake 16.Centrifugal clutch 17.Multiple clutch 18.Green economiser 19.Lever Safety Valve 20.Feed check valve 21.Fusible plugs 22.Pressure gauge model 23.Water gauge 24.Reducing valve 25.Dead weight safety valve 26.Rack & pinion 27.Worm gear 28.Flanged coupling 29.Belt drive single speed 30.Two stage spur gear 31.Flexible coupling 32.Model Of Cone Clutch	As per Time Table	Prof.P.N .Boka	Assistant Professor	M.E.
4	Material Science and Metallurgy/	20	1. Jomney & Quenching Test Apparatus 2. Thermocouple Calibration Test Rig 3. Muffle Furnace 4. Rockwell Hardness Tester 5. Metallurgical Trinocular Microscope with CCD Camera 6. Double disc Polishing Machine 7. Metallurgical Trinocular Microscope with CCD	As per Time Table	Prof.A.K .Patel	Assistant Professor	M.E.

Sr. No	Name of the Laboratory	No. of students per setup (Batch size)	Name of the Important equipment in each laboratory	Weekly utilization status	Technical manpower support		
					Name of the Technical staff	Designation	Qualification
			Camera & Image Analysis 8. Sand Casting Demonstrator				
5	Mechanical Measurement & Metrology	20	1. Outside micrometre, 2. Digital Venire Calliper, 3. Height Gauge Slip Gauges, 4. Combination set, 5. Bevel protractor, 6. Screw Thread Micrometre 7.Gear Tooth Venire 8.Wire Gauge 9. Plate Thickness gauge 10. Spirit level 200mm 11. Dial gauge measuring instrument 12. Bore gauge w/o dial (18-25)mm scientific instrument 13.gauges scientific instrument 14.Pressure Transducers 15.Dead Weight 16.Pressure Gauge Tester 17.Ultrasonic Thickness Gauge 18.Digital dial Indicator .01mm mitatoyo	As per Time Table	Tejas Rathi	Store keeper	B.E.
6	Fluid Mechanics & Fluid Power Engg.	20	1. Francis Turbine Set Up 2. Pelton Turbine Set Up 3. Reciprocating Pump Test Rig 4.Centrifugal Pump Test Rig 5.Hydraulic Test Bench 7.Gear Pump Test Rig	As Per Time Table	Nehal Prajapati	Lab Assistant	Diploma Mechanical
7	Manufacturing Process / Production Technology	20	1.. Shaping Machine 2. Lathe Machine 3. Hydraulic hacksaw Machine 4. Bench Grinder. 5.Pillar Type Drilling Machine 6. Universal Milling Machine 7. Capstone Lathe Machine 8. Power Press 10. 9. Spot Welding Machine 10.Arc Welding Set up 11.Slotting Machine 12.Display board of Drills &	As per Time Table	Prof.N.A.Patel	Assistant Professor	M.E.

Sr. No	Name of the Laboratory	No. of students per setup (Batch size)	Name of the Important equipment in each laboratory	Weekly utilization status	Technical manpower support		
					Name of the Technical staff	Designation	Qualification
			Reamers 13.Display board of Milling Cutters 14.Display Board of Lathe Machine Cutting Tools 15.Spark Erosion Machine (EDM) 16.Tig Welding Machine 17.Gas Welding Setup 18.Wood Working Lathe				
8	Kinematics & Dynamics of Machine Laboratory	20	1. Universal Vibration Apparatus 2. Motorise Gyroscope 3. Universal Governor Apparatus 4. Whirling Of Shaft Apparatus 5. Static& Dynamic Balancing Unit 6.Inversion of four bar mechanism 7.Cam & followers set 8.Scotch yoke mechanism 9.Pantograph mechanism 10.Model of disk brake Kinematic pairs 11.Model of Multi Plate clutch 12.Model of Worm gear & worm gear 13.Model of Rack & Pinion	As Per Time Table	Nehal Prajapati	Lab Assistant	Diploma Mechanical
9	IC/AUTO LAB	20	1 Sliding Mesh Gear Box. 2.Gear box(three speed & reverse gear) 3.Model of centrifugal clutch 4.Model of internal expanding brake 5.Hydraulic Brake Unit 6.shock absorber in cut section 7.Battery ignition system 8.Battery charger 9.Cut Section of 4 Wheel Drive 10.Cut Section of 4 Cylinder 4 Stroke Petrol	As Per Time Table	Nehal Prajapati	Lab Assistant	Diploma Mechanical

Sr. No	Name of the Laboratory	No. of students per setup (Batch size)	Name of the Important equipment in each laboratory	Weekly utilization status	Technical manpower support		
					Name of the Technical staff	Designation	Qualification
			Engine 11.Single stage Helical Gear 12.Single stage spiral Gear 13.Wankle engine (cut section) 14.Cut Section Single Cylinder Two Stork Petrol Engine 15.Cut Section Single Cylinder Four Stork Diesel Engine 16.Motor 1Hp 17.Single jet carburettor for 100cc bike 18.Modern carburettor for 4 wheel automobile				
10	Heat and Mass Transfer	20	1. Critical Radius Of Insulation Material Apparatus 2. Thermal Conductivity of Composite wall 3. Heat Transfer in Natural Convection 4.Heat Transfer in Forced Convection 5.Emissivity Measurement Apparatus	As Per Time Table	Nehal Prajapati	Lab Assistant	Diploma Mechanical
11	Industrial Engg.	20	Nut-Bolt Assembly , Cards	As Per Time Table	Dr.J.A.Vadher	Professor	PhD
12	Computer Aided Design	20	AUTOCAD INVENTOR, AUTOCAD, ANSYS,FUSION 360	As Per Time Table	P. N. BOKA	Assistant Professor	M.E.
13	Control Engineering	20	Hydraulic Trainer kit	As Per Time Table	Prof.A.R.Chaudhary	Assistant Professor	M.E.
14	Refrigeration and Air conditioning	20	1.Cooling Tower Setup 2.Vapour Absorption type Refrigerator 3.Domestic Refrigerator 4.Refrigeration Cycle Trainer 5.Heat Pump Trainer	As Per Time Table	Nehal Prajapati	Lab Assistant	Diploma Mechanical

Sr. No	Name of the Laboratory	No. of students per setup (Batch size)	Name of the Important equipment in each laboratory	Weekly utilization status	Technical manpower support		
					Name of the Technical staff	Designation	Qualification
15	Computer Aided Manufacturing	20	1.CNC Lathe trainer with ATC & Servo Drive 2.AUTOCAD INVENTOR, AUTOCAD, ANSYS,FUSION 360	As Per Time Table	Prof.N.A .Patel	Assistant Professor	M.E.

6.2 Additional facilities created for improving the quality of learning experience in laboratory

Sr. No	Facility Name	Details	Reasons for creating facility	Utilization	Areas in which students' are expected to have enhanced learning	Relevance to POs / PSOs
1	Design Lab	77 Different Items Available in Lab.	To Create a culture of innovation by fostering creativity and innovative imagination of students. This will also to provide opportunity and a platform to the student with the innovative mind set to work with tools and equipment to transform his/her idea into product.	For innovative projects and fabrication of products.	Design, Testing, Analysis, Model & Prototyping.	PO1, 2, 3, 4, 5, 7, 11 and 12. PSO1AND 2
2	Computer Centre	30 Computers with internet facilities, Fully Air conditioning, With ANSYS and MATLAB Software.	For internet and Computing facilities.	Students can access the facilities during free time and also utilize software.	Design, Synthesis and Analysis of mechanical engineering problems.	PO1, 2, 3, 4, 5 and 12 PSO1and 2.
3	Incubation Centre under SSIP	With 3D printer, computer with internet and basic Facilities.	The primary purpose of the incubation centre is to facilitate the creation and incubation of ideas & innovation that benefit society and industries.	To support students for innovative idea implementation, project.	Working on prototype.	PO1, 2, 3, 5, 7, 9, 11 and 12. PSO1and 2.
4	Common Internet Facility	Ethernet/Wi-Fi	Facility to staff and students for enhancing Teaching Learning	Throughout the semester	More knowledge apart from curriculum, 24×7 access to learning resources	PO1, 2, 10 and 12 PSO1and 2.
5	BISAG Antenna & TV	BISAG Antenna & 32" LG LCD	Teaching, Learning	Throughout the semester	Facility for video lecture of BISAG programs for subjects	PO1, 2, and 12

Sr. No	Facility Name	Details	Reasons for creating facility	Utilization	Areas in which students' are expected to have enhanced learning	Relevance to POs / PSOs
6	NAMO WIFI	7 Hotspots with 20 mbps user side internet connectivity	E-Learning and Self Learning.	Through distributed tablets by GoG.	Problem formulation for projects, patent search, design engineering.	PO1, 2, 6, 9 and 12
7	Virtual Lab Facility	Virtual Labs Indian Institute Of Technology Bombay Mumbai	To provide a complete Learning Management System around the Virtual Labs where the students can avail the various tools for learning, including additional web-resources, video-lectures, animated demonstrations and self-evaluation	Throughout the semester	Internet-based experimentation permits use of resources – knowledge, software, and data available on the web, apart from encouraging skillful experiments being simultaneously performed at points separated in space (and possibly, time)	PO1, 5, 9, and 12 PSO1 and2. PSO1and 2.
8	E-Library Facility	GTU E-Library through knimbus platform (https://gtu.new.knimbus.com) National Digital Library	Facility to staff and students for enhancing knowledge.	Throughout the semester	Read online, or download the text books, audio and video content of all subjects	PO1, 2, 3, 4, 5 and 12. PSO1and 2.
9	Dept. Library	Having collection of Text Books, Reference Books, Project / seminar report.	To meet the needs of the students, To provide reference facilities, To refer advanced information for seminar, laboratory, projects, to know	Throughout the semester	Students and staff can refer text book and have a better understanding, preparing notes	PO1, 2, 3, 4 and 12. PSO1 and2

Sr. No	Facility Name	Details	Reasons for creating facility	Utilization	Areas in which students' are expected to have enhanced learning	Relevance to POs / PSOs
			about the past research activities undertaken by the students			
10	Portable Projector / Overhead LCD Projector	Sony Make	For better visualization of theoretical concepts	Throughout the semester	Better understanding of complicated topics by visualization	PO1, 5

6.3 Laboratories: Maintenance and overall ambiance (10)

The Department provides very good laboratory facilities and hands-on training to the under graduate 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 curriculum and teaching learning process. The preventive maintenance of various equipment and machines are carried out periodically. In case of the new purchase of items, a central store is taking care of floating inquiries/ tenders for major/minor purchase/maintenance as per government purchase procedures and the requisition given by individual faculty members of the department in their area of interest. All laboratories are well-lit and have continuous power supply which ensures unrestricted working of the machines and instruments. Laboratories are spacious enough to accommodate assigned batch of students. The laboratories are properly ventilated to ensure healthy circulation of fresh air and light. Conventional black boards 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. Routine checkup of the equipment has been carried out at the end of every semester.
2. As and when required, minor repairs are carried out by the technical staff.
3. Purchase of consumable and non-consumable item is planned before the commencement of every semester and record of the same is maintained in department as well as central store.
4. Laboratories are upgraded by adding the latest equipment and software time to time.

6.3.2 Overall Ambience

Department has well equipped laboratories with highly valuable and efficient equipment which shall cater to UG course as per curriculum requirements.

1. Department has enough labs which are used for all the years on timetable basis to meet the curriculum requirements.
2. The courses which have practical work will be provided labs every week.
3. Conditions of chairs/benches/stools are in good condition. Chairs are provided for individual students in Labs.
4. Labs are equipped with sufficient hardware and licensed software to run program specific curriculum and off program curriculum.
5. Sufficient laboratory manual are distributed to students.
6. Sufficient number of windows is available for ventilation and natural light and every lab has one/two exit.
7. Lighting system is very effective, along with the natural light in every corner of the rooms.
8. Each laboratory is equipped with white/black board, computers, Internet, and such other amenities and facilities.
9. We have a mechanism for student feedback in each semester and subject wise.

6.4 Project laboratory (5)

The project laboratory provides opportunity to 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 in to life-long learners. Groups of students work together on projects or seminars during their under graduate program. The students regularly work in the project laboratory for Design engineering projects, IDP/UDP projects and SSIP (Student Start-Up Innovation Project) projects. To facilitate the projects, and there is a special provision in the SSIP budget.

All the laboratories in the department are utilized for the efficient execution of the Bachelor program. Students are also participating in various project competitions like hackathon and vibrant Gujarat at the institute as well as outside the institute. In vibrant Gujarat 2017, out of best eight projects two projects of our institute (Mechanical Engineering Department) were shortlisted.

6.5 Safety measures in laboratories (10)

Safety in laboratories is a very important aspect of engineering education. Recognizing the importance of safety in the laboratories always start with getting acquainted with the possible source of hazards. For this our department has formulated certain guidelines which give an idea about Do's and Don'ts while working in laboratories for the safety of the students. To reduce the risks involved while experimentation, there are certain procedures and norms need to be followed by individuals. It is important that the correct procedures are followed while handling equipment, and executing the experiment and safety information is provided by a faculty member, laboratory assistants, or staff member at the beginning of each laboratory sessions.

Table 6.5.1 General instructions for Safety / Discipline of individuals

Sr. No	Safety Aids / Instructions
1.	Fire extinguisher is kept in the laboratories.
2.	All students are required to wear Identity Card (I-Card), proper dressing 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.
4.	Before use of any equipment / instrument, refer user manual of the same and follow the safety norms.
5.	When attempting practical work all stools should be put away.
6.	Never do unauthorized experiments.
7.	Follow the instructions as per given manuals and instructed by respective faculty and staff members.
8.	Keep your lab-space clean and organized.
9.	Do not waste water or any utility.
10.	All laboratories are under CCTV surveillance.

Table 6.5.2 Safety measures in various laboratories of the Department

Sr. No.	Name of the Laboratory	Safety measures
1.	Workshop	• General Rules of Conduct in the Laboratory are displayed. • Specific Safety Rules for students are displayed. • First aid box, Fire extinguisher & Hand gloves are kept in laboratory. • Students are instructed to come with proper dressing. • All the experiments are performed in presence of faculty. • Avoid the use of damaged equipment and provides needful equipment and components. • Periodical servicing of the lab equipment. • Maintain a clean and organized laboratory. • Avoid the use of cell phones. • Appropriate storage areas. • Hand gloves, Safety shoes, Welding goggles are provided in the laboratory.
2.	Basic Mechanical Engineering	• General Rules of Conduct in the Laboratory are displayed. • Specific Safety Rules for students displayed. • First aid box, Fire extinguisher are kept in laboratory. • Avoid the use of damaged equipment and provides needful equipment and components. • Maintain a clean and organized laboratory, • Avoiding the use of cell phones. • Appropriate storage areas. • Shoes must put on during laboratory session.
3.	Material Science and Metallurgy Lab	• General Rules of Conduct in the Laboratory are displayed. • Specific Safety Rules for students displayed. • First aid box, Fire extinguisher are kept in laboratory. • Avoiding the use of damaged equipment and provides needful equipment and components. • Periodical servicing of the lab equipment. • Maintain a clean and organized laboratory, • Avoiding the use of cell phones. • Appropriate storage areas. • Shoes must put on during laboratory session. • Students are instructed to come with proper dressing.
4.	Mechanical Measurement and Metrology Lab	• General Rules of Conduct in the Laboratory are displayed. • Specific Safety Rules for students displayed. • First aid box, Fire extinguisher are kept in laboratory.

Sr. No.	Name of the Laboratory	Safety measures
		• Avoiding the use of damaged equipment and provides needful equipment and components. • Periodical servicing of the lab equipment. • Maintain a clean and organized laboratory. • Avoiding the use of cell phones. • Appropriate storage areas. • Shoes must put on during laboratory session. • Students are instructed to come with proper dressing.
5.	Fluid Mechanics & Fluid Power Engg.	• General Rules of Conduct in the Laboratory are displayed. • Specific Safety Rules for students displayed. • First aid box, Fire extinguisher are kept in laboratory. • Avoiding the use of damaged equipment and provides needful equipment and components. • Periodical servicing of the lab equipment. • Maintain a clean and organized laboratory, • Avoiding the use of cell phones. • Appropriate storage areas. • Shoes must put on during laboratory session. • Students are instructed to come with proper dressing.
6.	Manufacturing Processes – I & II, Production Technology Lab	• General Rules of Conduct in the Laboratory are displayed. • Specific Safety Rules for students displayed. • First aid box, Fire extinguisher & Hand gloves are kept in laboratory. • Avoiding the use of damaged equipment and provides needful equipment and components. • Periodical servicing of the lab equipment. • Maintain a clean and organized laboratory, • Avoiding the use of cell phones. • Appropriate storage areas. • Shoes, Hand gloves, Safety shoes, Welding goggles must be used in the lab • Students are instructed to come with proper dressing.
7.	Kinematics and Dynamics of Machine Lab	• General Rules of Conduct in the Laboratory are displayed. • Specific Safety Rules for students displayed. • First aid box, Fire extinguisher are kept in laboratory. • Avoiding the use of damaged equipment and provides needful equipment and components. • Periodical servicing of the lab equipment. • Maintain a clean and organized laboratory, • Avoiding the use of cell phones.

Sr. No.	Name of the Laboratory	Safety measures
		• Shoes must put on during laboratory session. • Appropriate storage areas. • Students are instructed to come with proper dressing.
8.	I. C./Auto Lab	• General Rules of Conduct in the Laboratory are displayed. • Specific Safety Rules for students displayed. • First aid box, Fire extinguisher are kept in laboratory. • Avoiding the use of damaged equipment and provides needful equipment and components. • Periodical servicing of the lab equipment. • Maintain a clean and organized laboratory, • Avoiding the use of cell phones. • Appropriate storage areas. • Shoes must put on during laboratory session. • Students are instructed to come with proper dressing.
9.	Heat and Mass Transfer Lab	• General Rules of Conduct in the Laboratory are displayed. • Specific Safety Rules for students displayed. • First aid box, Fire extinguisher are kept in laboratory. • Avoiding the use of damaged equipment and provides needful equipment and components. • Periodical servicing of the lab equipment. • Maintain a clean and organized laboratory. • Avoiding the use of cell phones. • Appropriate storage areas. • Shoes must put on during laboratory session. • Students are instructed to come with proper dressing.
10.	Refrigeration and Air conditioning Lab	• General Rules of Conduct in the Laboratory are displayed. • Specific Safety Rules for students displayed. • First aid box, Fire extinguisher are kept in laboratory. • Avoiding the use of damaged equipment and provides needful equipment and components. • Periodical servicing of the lab equipment. • Maintain a clean and organized laboratory, • Avoiding the use of cell phones. • Appropriate storage areas. • Shoes must put on during laboratory session. • Students are instructed to come with proper dressing.
11.	CAD Lab	• General Rules of Conduct in the Laboratory are displayed.

Sr. No.	Name of the Laboratory	Safety measures
		• Specific Safety Rules for students displayed. • Fire extinguisher are kept in laboratory. • Maintain a clean and organized laboratory, • Avoiding the use of cell phones. • Shoes must be remove outside the laboratory. • Properly switch on and switch off the computer. • Do not touch areas in UPS
12	CAM Lab	• General Rules of Conduct in the Laboratory are displayed. • Specific Safety Rules for students displayed. • Avoiding the use of damaged equipment and provides needful equipment and components. • Periodical servicing of the lab equipment. • Fire extinguisher are kept in laboratory. • Maintain a clean and organized laboratory, • Avoiding the use of cell phones. • Shoes must put on during laboratory session. • Students are instructed to come with proper dressing.

CRITERION 7	Continuous Improvement	50

7. CONTINUOUS IMPROVEMENT (50)

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

Table 7.1.1 POs &PSOs Attainment Levels and Actions for improvement
AY: 2020-21 (CAY)

POs& PSOs	Target Level	Attainment level	Observations
PO1: Engineering knowledge			
PO1	2.2	2.37	Target Achieved
Action 1: Target level increased to 2.3 for next A.Y.			
Action 2: Online Expert lectures were conducted to enhance engineering knowledge.			
Actions 3: Students are encouraged to participate in inter-institute webinar.			
PO2: Problem analysis			
PO2	2.0	2.06	Target Achieved
Action 1: Target level increased to 2.1 for next A.Y.			
Action 2: Enhanced through active learning assignments based on analytical practices.			
PO3: Design/development of solutions			
PO3	1.9	2.09	Target Achieved
Action 1: Target level increased to 2.0 for next A.Y.			
Action 2: Online expert lectures were conducted to enhance engineering knowledge.			
Action 3: Design and development based problems were given in the design engineering course.			
PO4: Conduct investigations of complex problems			
PO4	1.9	2.00	Target Achieved
Action 1: Target level increased to 2.0 for next A.Y.			
Action 2: Students were motivated to undertake real life problems as their final year project and SSIP.			
Action 3: Students were motivated to use the design lab for their project work.			
PO5: Modern tool usage			
PO5	1.7	1.83	Target Achieved Enhanced the facility of ANSYS and Matlab software at the institute level.
Action 1: Target level increased to 1.8 for next A.Y.			
Action 2: Students were encouraged to use the latest software like Autodesk, Matlab and ANSYS for design and analysis for their project work and for the subjects.			
Action 3: Expert session on ZED Maturity assessment tool was arranged			

PO6: The engineer and society			
PO6	1.8	1.96	Target Achieved Induction program and NSS activities have helped students to attain the PO.
Action 1: Target level increased to 1.9 for next A.Y.			
PO7: Environment and sustainability			
PO7	1.8	1.87	Target Achieved
Action 1: Target level increased to 1.9 for next A.Y.			
Action 2: Students conducted an Awareness program on Single use plastic, water conservation and Swachhta.			
PO8: Ethics			
PO8	1.7	1.75	Target Achieved
Action 1: Target level increased to 1.8 for next A.Y.			
Action 2: Online programs were offered to the students at different levels/grades to enhance the Big Five non-cognitive (soft) skills under finishing school and induction program.			
Action 3: Webinars like "India's Freedom Struggle" and "Dandi March Ek Sankalp" sensitised the students and developed the ethics.			
PO9: Individual and team work			
PO9	1.9	1.89	Target Not Achieved Due to the Corona pandemic condition, Physical group activities were not possible at institute level.
Action 1: Target level is 1.9 for next A.Y.			
Action 2: Online Sensitisation program for project work has been arranged under SSIP.			
Action 3: Individual and Team work is developed by various NSS activities.			
PO10: Communication			
PO10	1.8	1.85	Target Achieved
Action 1: Target level increased to 1.9 for next A.Y.			
Action 2: The online 'Finishing School Program' is initiated in association with TPO to impart training to the final year students focusing on Communication - presentation skills, email writing, CV writing, various modes of interviews and grooming for personality development.			
PO11: Project management and finance			
PO11	1.8	1.89	Target Achieved
Action 1: Target level increased to 1.9 for next A.Y.			
Action 2: Students projects were managed by Project Management Monitoring System (PMMS). Innovative student projects were funded by SSIP.			
Action 3: Students were supported through SSIP for their project finance.			
PO12: Life-long learning			
PO12	1.8	1.80	Target Achieved
Action 1: Target level increased to 1.9 for next A.Y.			
Action 2: Students were encouraged to participate in NPTEL courses to be aware of the current scenario and improve their knowledge.			
Action 3: NSS activities and finishing school were carried out to develop various skills of students.			

PSO1: To apply knowledge and skill of mechanical engineering to solve real life problems to meet the need of society.			
PSO1	1.8	2.19	Target Achieved
Action 1: Target level increased to 1.9 for next A.Y.			
Action 2: Expert lectures; training in industry improves student's skill in the area of mechanical engineering.			
Action 3: Motivate students for real life problems as a project.			
PSO2: To able to pursue his career as professional mechanical engineer.			
PSO2	1.8	1.89	Target Achieved
Action 1: Target level increased to 1.9 for next A.Y.			
Action 2: Cultural and social functions, NSS activities, improve social and cultural values. Project work, SSIP activities, career guidance and Finishing school improves capabilities of students to be a professional mechanical engineer.			

Table 7.1.2 POs & PSOs Attainment Levels and Actions for improvement
AY: 2019-20 (CAY*m1*)

POs& PSOs	Target Level	Attainment level	Observations
PO1: Engineering knowledge			
PO1	2.1	2.30	Target Achieved
Action 1: Target level increased to 2.2 for next A.Y.			
Action 2: Expert lectures and Field visits were conducted to enhance engineering knowledge.			
Actions 3: Students are encouraged for internship during semester break.			
PO2: Problem analysis			
PO2	1.9	2.01	Target Achieved
Action 1: Target level increased to 2.0 for next A.Y.			
Action 2: Enhanced through active learning assignments based on analytical practices.			
PO3: Design/development of solutions			
PO3	1.8	2.08	Target Achieved
Action 1: Target level increased to 1.9 for next A.Y.			
Action 2: Design and development based problems were given in the design engineering course.			
Action 3: Students were motivated to use design lab for their project work.			
PO4: Conduct investigations of complex problems			
PO4	1.8	1.99	Target Achieved
Action 1: Target level increased to 1.9 for next A.Y.			
Action 2: Students were motivated to undertake real life problems as their final year project and SSIP.			
PO5: Modern tool usage			
PO5	1.6	1.81	Target Achieved. Enhanced the facility of ANSYS software at the institute level.

Action 1: Target level increased to 1.7 for next A.Y.			
Action 2: Students were encouraged to use the latest software like Autodesk, Matlab and ANSYS for design and analysis for their project work and for the subjects.			
Action 3: Training was conducted for Autodesk Fusion 360 for students and encouraged them to participate in various state level competitions like HACKATHON Autodesk Fusion 360.			
PO6: The engineer and society			
PO6	1.7	1.85	Target Achieved Induction program and NSS activities have helped students to attain the PO
Action 1: Target level increased to 1.8 for next A.Y.			
PO7: Environment and sustainability			
PO7	1.7	1.84	Target Achieved
Action 1: Target level increased to 1.8 for next A.Y.			
Action 2: Students conducted cultural and social functions at villages for awareness for Swatch Bharat Summer Internship at Patosan village.			
Action 3: Students and faculties were motivated from Tree plantation program inside the campus and hostel.			
PO8: Ethics			
PO8	1.6	1.72	Target Achieved
Action 1: Target level increased to 1.7 for next A.Y.			
Action 2: A program was offered for students at different levels/grades to enhance the Big Five non-cognitive (soft) skills under the induction program and finishing school.			
Action 3: Sessions by Motivation speakers were arranged.			
PO9: Individual and team work			
PO9	1.8	1.92	Target Achieved Participation in state and national level events helped to achieve the PO
Action 1: Target level increased to 1.9 for next A.Y.			
Action 2: Sensitisation program for project work has been arranged under SSIP.			
Action 3: Group assignment and Group task has been implemented under laboratory session.			
PO10: Communication			
PO10	1.7	1.82	Target Achieved
Action 1: Target level increased to 1.8 for next A.Y.			
Action 2: The 'Finishing School Program' is initiated in association with TPO to impart training to the final year students focusing on Communication - presentation skills, email writing, CV writing, various modes of interviews and grooming for personality development.			
Action 3: Students were encouraged to participate at various technical and non-technical competitions organized at state and national level to improve their communication.			

PO11: Project management and finance			
PO11	1.7	1.88	Target Achieved
Action 1: Target level increased to 1.8 for next A.Y.			
Action 2: Students projects were managed by Project Management Monitoring System (PMMS). Innovative student projects were funded by SSIP.			
Action 3: Students were made coordinators of events which enhance their financial management and negotiation skills for getting sponsorship.			
PO12: Life-long learning			
PO12	1.7	1.70	Target Achieved It is to be noticed that students were not referring the reference books.
Action 1: Target level increased to 1.8 for next A.Y.			
Action 2: Students were encouraged to visit technical exhibitions and NPTEL courses to be aware of the current scenario and to improve their knowledge.			
Action 3: Students counselling were carried out for preparation of various competitive examinations like GATE, civil services.			
Action 4: Various learning materials made available for competitive examinations.			
PSO1: To apply knowledge and skill of mechanical engineering to solve real life problems to meet the need of society.			
PSO1	1.7	2.08	Target Achieved
Action 1: Target level increased to 1.8 for next A.Y.			
Action 2: Expert lectures, field visits and training in industry improves student's skill in the area of mechanical engineering.			
Action 3: Motivate students for real life problems as a project.			
PSO2: To able to pursue his career as professional mechanical engineer.			
PSO2	1.7	1.77	Target Achieved
Action 1: Target level increased to 1.8 for next A.Y.			
Action 2: Cultural and social functions, NSS activities, improves social and cultural values. Project work, SSIP activities and Finishing school improves the capabilities of students to be a professional mechanical engineer.			

Table 7.1.3 POs & PSOs Attainment Levels and Actions for improvement
AY: 2018-19 (CAY*m2*)

POs&PSOs	Target Level	Attainment level	Observations
PO1: Engineering knowledge			
PO1	2.00	2.12	Target Achieved
Action 1: Target level increased to 2.1 for next A.Y.			
Action 2: Expert lectures and Field visits were conducted to enhance the engineering knowledge.			
Actions 3: Students are encouraged for internship during semester break.			
PO2: Problem analysis			
PO2	1.80	1.88	Target Achieved

Action 1: Target level increased to 1.9 for next A.Y.			
Action 2: Enhanced through assignments based on analytical practices.			
PO3: Design/development of solutions			
PO3	1.70	1.96	Target Achieved
Action 1: Target level increased to 1.8 for next A.Y.			
Action 2: Expert lectures and Field visits were conducted to enhance the engineering knowledge.			
Action 3: Design and development based problems were given in design engineering course.			
Action 4: Students were motivated to use the design lab for their project work.			
PO4: Conduct investigations of complex problems			
PO4	1.70	1.83	Target Achieved
Action 1: Target level increased to 1.8 for next A.Y.			
Action 2: Students were motivated to undertake real life problems as their final year project			
PO5: Modern tool usage			
PO5	1.60	1.55	Target Not Achieved Students are less proficient towards modelling and simulation software to solve engineering problems.
Action 1: latest computational software ANSYS suggested to purchase.			
Action 2: Students were encouraged to use latest software like Autodesk and Matlab for design and analysis for their project work and for the subjects.			
Action 3: Training was conducted for Autodesk Fusion 360 for students and encouraged them to participate in various state level competitions like HACKATHON Autodesk Fusion 360.			
PO6: The engineer and society			
PO6	1.60	1.76	Target Achieved Induction program, NCC and NSS activities have helped students to attain the PO.
Action 1: Target level increased to 1.7 for next A.Y.			
PO7: Environment and sustainability			
PO7	1.60	1.70	Target Achieved
Action 1: Target level increased to 1.7 for next A.Y.			
Action 2: Students conducted cultural and social functions at villages for awareness for Swatch Bharat Summer Internship at Patosan village.			
Action 3: Students and faculties were motivated to for Tree plantation program inside the campus and hostel.			
PO8: Ethics			
PO8	1.60	1.53	Target Not Achieved

			Students are found to be casual in their approach during submission and other lab task and also unaware about their responsibility in the competitive environment.
Action 1: Various activities like Blood donation camp, fire safety, road safety awareness, etc. were arranged to improve Ethical values in students.			
Action 2: Sessions by Motivation speakers were arranged.			
PO9: Individual and team work			
PO9	1.70	1.76	Target Achieved
Action 1: Target level increased to 1.8 for next A.Y.			
Action 2: Sensitisation program for project work has been arranged under SSIP.			
Action 3: Group assignment and Group task has been implemented under laboratory session.			
PO10: Communication			
PO10	1.70	1.64	Target Not Achieved Students are found to be lacking in oral and written communication. Even their presentation skills require improvement.
Action 1: The 'Finishing School Program' is initiated in association with TPO to impart training to the final year students focusing on Communication - presentation skills, email writing, CV writing, various mode of interviews and grooming for personality development.			
Action 2: Students were encouraged to participate at various technical and non-technical competition organized at state and national level to improve their communication.			
PO11: Project management and finance			
PO11	1.60	1.76	Target Achieved
Action 1: Target level increased to 1.7 for next A.Y.			
Action 2: Students projects were managed by Project Management Monitoring System (PMMS).			
Action 3: Students were made coordinators of events which enhance their financial management and negotiation skills for getting sponsorship.			
PO12: Life-long learning			
PO12	1.70	1.60	Target Not Achieved
Action 1: Students were encouraged to visit technical exhibitions for current scenario and NPTEL courses to brush-up the fundament knowledge.			
Action 2: Students counselling were carried out for preparation of various competitive examinations like GATE, civil services.			
Action 3: Various learning materials made available for competitive examinations.			
PSO1: To apply knowledge and skill of mechanical engineering to solve real life problems to meet the need of society.			
PSO1	1.6	1.93	Target Achieved
Action 1: Target level increased to 1.7 for next A.Y.			

Action 2: Expert lectures, field visits and internship in industry improves student's skill in the area of mechanical engineering.			
Action 3: Assignments based on analytical practices helps students enable to apply their knowledge on real life problems.			
PSO2: To able to pursue his career as professional mechanical engineer.			
PSO2	1.6	1.66	Target Achieved
Action 1: Target level increased to 1.7 for next A.Y.			
Action 2: Cultural and social functions improve social and cultural values. Project work, SSIP activities and motivation of students to use various references books, technical magazines, handbooks etc. improves qualities of team works and knowledge in recent developments in the area of mechanical engineering, which makes students as a professional mechanical engineer.			

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

Academic Audit is essential to track progress of an institution towards its drive for achieving academic excellence. The audit not only reveals levels of proficiency of academic institution in terms of quality of teaching and administration but also reveals any deviation and course correction needs for bringing improvements i.e. improvements in teaching methodology and support infrastructure, capacity building of faculty members, department and institute. The Following auditing bodies are visiting and conducting audit regularly and giving their feedback:

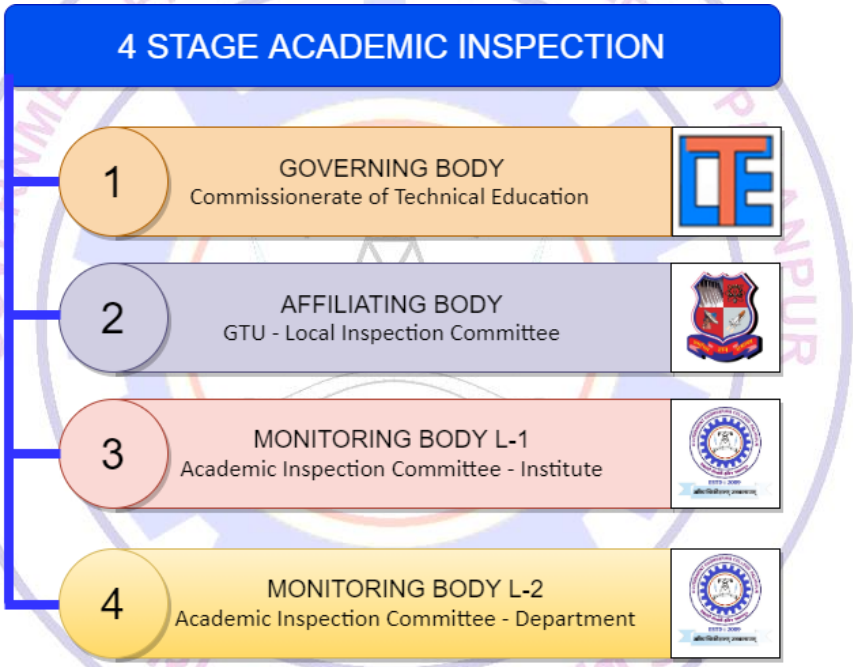

Fig 7.2.1 Mechanism for Academic Inspection

1. **Commissionerate of Technical Education (CTE)**
   - CTE governs all activities of the institute.
   - CTE monitors all day-to-day academic activities through CCTV.
   - CTE issues notice and asks for written explanation if any misconduct is found.
   - Time to time, CTE also sends inspection committee to audit the academics without any prior intimation.

   Action Taken: In case of serious misconduct by the faculty members, note is entered in service book and the same is considered for CAS and departmental promotions.

2. **Local Inspection Committee from GTU**
   - Gujarat Technological University also practices a regular monitoring system.
   - GTU forms a team comprising highly experienced and qualified faculty members from different institutes affiliated to GTU.

- The team visits on predefined date to audit the compliance of the institute to the norms of GTU.
- The team prepares a deficiency report and submits to the institute through GTU for further improvement.

Action taken: Institute will submit compliance report for deficiency, and if required then ask help from CTE office.

3. Academic Inspection Committee of Institute

- To comply with the norms of CTE and GTU, institute also is having an Academic Inspection Committee comprises of senior faculty members from different departments.
- Time to time, the committee observes the academic activities of all departments and brings any lapses to the notice of Principal for further action.

Action taken: In case of serious misconduct, the faculty members were asked to submit written explanation.

4. Academic Inspection Committee of Department

- Department has formed an Academic Inspection Committee comprises of faculty members of the department to inspect daily academic activities as per the time table and brings any lapses to the notice of Head of Department for further action.
- Senior faculty members have been assigned to monitor academic work under the LLCC duty.
- Head of Department regularly check the academic documents like course file, equipment utilization report, List of experiments, Mid semester results, feedback from students etc.
- New Purchases: Department purchase committee has been formed for new equipments required to purchase, Vikaslaxi plan, new books required to purchase as per curriculum. This team looks into the matters concerning the Requirement of ICT tools, Hardware and Software, and additional infrastructural facilities.
- Course file consist of following documents which are updated time to time wherever applicable.
    1. Copy of University syllabus
    2. Lesson Planning
    3. Assessment Planning
    4. List of Experiments
    5. Lecture notes
    6. Lab Manual
    7. Laboratory Equipment List
    8. Mid Sem. Exam syllabus and question paper
    9. University Exam Question paper

10. Class attendance Register
11. CO-PO Mapping and Attainment

Action taken:

- Course files were updated on regular basis.
- Continuous assessment was conducted for laboratory sessions.
- Topics beyond curriculum were identified and delivered in best possible way.
- Expert lecture and industrial visits were conducted.

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

- Assessment is based on improvement in:
  - Placement: number, quality placement, core industry, pay packages etc.
  - Higher studies: performance in GATE, GRE, GMAT, CAT etc., and admissions in premier institutions
  - Entrepreneurs

Table: 7.3.1 Statistics of Placement, Higher Studies and Entrepreneurship

Item	LYG (Entry Yr. 2016-17)	LYG*m1* (Entry Yr. 2015-16)	LYG*m2* (Entry Yr. 2014-15)
Total No. of Final Year Students	70	69	64
No. of students placed in companies or Government Sector	10	16	26
No. of students admitted to higher studies with valid qualifying scores	5	6	5
No. of students turned entrepreneur in engineering/technology	1	1	2

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

Item		CAY (Entry 2020-21)	CAY m1 (Entry 2019-20)	CAY m2 (Entry 2018-19)
National Level Entrance (JEE)	No. of Students admitted	-	-	-
	Opening Score/Rank	-	-	-
	Closing Score/Rank	-	-	-
State/University /Level Entrance Examination/ Others (GUJ-CET)	No. of Students admitted	23	58	64
	Opening Score/Rank	6386	11868	7437
	Closing Score/Rank	27269	32506	32490
Diploma certificate (Examination for Lateral Entry)	No. of Students admitted	37	9	17
	Opening Score/Rank	1100747	DD11628	1160176
	Closing Score/Rank	1104953	DD12491	1160697
Average CBSE/Any other Board Result of admitted students (Physics, Chemistry & Maths)		-	-	-

Note:

- Opening and closing Ranks are that of Open/General category

CRITERION 8	First Year Academics	50

8. FIRST YEAR ACADEMICS (50)

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

Data for first year courses to calculate the FYSFR:

Table 8.1.1 Calculation of FYSFR

Year	Number of students (approved intake strength)	Number of faculty members (considering fractional load)	FYSFR	*Assessment = (5 ×20)/ FYSFR (Limited to Max. 5)
2020-21	18	4.8	37.04	0
2019-20	24	7.0	34.24	0
2018-19	24	9.3	25.65	0
Average	22	6.8	**32.21**	**0**

***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 courses

Year	*x*	*Y*	*R F*	Assessment of faculty qualification $(5x+3y)/RF$
2020-21	4	15	9	7.22
2019-20	5	21	12	7.33
2018-19	3	24	12	7.25
Average Assessment				**7.27**

8.3. First Year Academic Performance (10)

Academic Performance=((Meanof1st Year Grade Point Average of all successful Studentsona10pointscale) 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

Mechanical Engineering			
	2018-19(CAYm2)	**2019-20(CAYm1)**	**2020-21(CAY)**
Average CPI	3.53	4.97	7.824
Total Successful Students	45	37	22
Total Students	53	38	22
Academic Performance	2.99	4.83	7.824

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)

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 2.2.2.1. For the 150 mark subject, component wise mark distribution is shown below.

Internal Assessment

(a) Mid-Semester Exam (M) (30 Marks)

(b) Assignment (I) (10 Marks)

(c) Continuous evaluation of practical work (I) (10 Marks)

External Assessment

(a) End semester exam (E) (70 Marks)

(b) End semester practical examination (V) (30 Marks)

For 100 mark subjects having only theory component, there is only one component for external and internal evaluation i.e. E and M respectively and their maximum marks are as mentioned above. For 100 marks subjects having only practical component, there is only one component for external and internal evaluation i.e. V and I respectively 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, Mechanical Engineering department has set target value of 40% marks in all components for 1st and 2nd Semester subjects. The evaluation process is based on result/marks of the students in various components listed below.

Measuring attainment of COs through Mid-Semester Exam, Assignments, Continuous Evaluation, University Exam and University Viva

Mid-Sem Exam

The MSE question papers are prepared as per content covered. Total marks for the MSE examination is 30 and questions are aligned with Bloom's level. A question in MSE question paper is prepared as per number of COs covered by the subject coordinator as per content of MSE, and marks obtained by the students in particular question is directly mapped with the CO addressed by the question. While preparing the question paper, it is ascertained that optional questions are asked from same CO so that students will attempt all the question related to COs covered as per MSE syllabus. MSE question paper is collectively prepared by all the teachers associated with the subject. After MSE, PAC assesses the quality of question papers and necessary instructions are issued to the course coordinator if required. This procedure has been followed for the year 2017-18& 2018-19 for 30 marks and in 2019-20 and in 2020-21, PA has been taken as per CO covered and ALA (Assignment/Power Point presentation) has been given as per remaining Cos, which is discussed below:

ALA (Assignment/Power Point presentation)

To improve the understanding of the students about the course content a certain number of assignments are given to the students at regular intervals depending upon the content being covered in the class. This practice has been implemented during academic year 2019-20. Marks are given on the basis of performance of the students. All remaining COs are covered through the assignments. Attempts are made to ensure that students

respond to all COs. The assignment and open-ended problems are prepared collectively by all the teachers associated with the subject and are reviewed by PAC.

Continuous Evaluation

During laboratory hours students are required to perform experiments in a small group. Their evaluation during practical hours is considered under this head and its weightage is of 20 marks. Continuous evaluation is done and marks are awarded according to the performance of the students in conducting the experiments, calculations made and conclusions drawn, answering the quiz and oral questions during laboratory session. During the year 2019-20 rubrics based evaluation has been started. GTU provides the list of experiments to be performed with the flexibility of designing the experiments such that all the course COs are covered during practical hours.

University Theory Exam

End semester exam question paper of each course is normally drawn as per GTU guidelines conforming to the level of learning and curriculum weights. Question paper is of 70 marks and it addresses all COs of the course. Assessment is done by a teacher of affiliated colleges of the university and identity of the student is kept confidential. GTU provides the result in the form of grades. The absolute grading system is adopted by the university and hence for the purpose attainment, these grades are converted into marks as per the below-given table.

Grade	Marks allotted out of 70
AA	65
AB	56
BB	49
BC	42
CC	35
CD	29
DD	26
FF	12

University Viva

University practical examination is conducted by the examiners appointed by the GTU. The examiners are faculty members of other GTU affiliated colleges. The practical and viva voce examination is conducted in a way so that all the COs are covered during the exam. University assigns grades to the students and same are converted into marks as per below-given table.

Grade	Relative Marks allotted
AA	28
AB	24
BB	21
BC	18
CC	15
CD	13
DD	11
FF	5

Measuring Course Outcomes attained through External and Internal Assessments:

(a) Attainment Level 1: 60% students scoring more than 40% in Internal and External assessments for 1st Semester and 2nd Semester courses.

(b) Attainment Level 2: 70% students scoring more than 40% in Internal and External assessments for 1st Semester and 2nd Semester courses.

(c) Attainment Level 3: 80% students scoring more than 40% in Internal and External assessments for 1st Semester and 2nd Semester courses.

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

CO attainment matrix for A.Y. 2018-19 (CAYm2)

COURSE CODE	CO1	CO2	CO3	CO4	CO5
Sem:1					
C103N	2	2	3	2	3
C106N	3	3	3	3	-
C107N	1	2	1	2	2
C109N	2	3	2	0	0
C110N	1	3	0	0	1
C112N	3	3	-	-	-
Sem:2					
C101N	3	3	3	3	3
C102N	2	2	2	2	2
C104N	1	2	1	2	-
C105N	3	3	3	3	3
C108N	3	3	3	3	3
C111N	2	2	2	1	2

CO attainment matrix for A.Y. 2019-20 (CAYm1)

COURSE CODE	CO1	CO2	CO3	CO4	CO5
Sem:1					
C103N	1	2	3	3	3
C106N	3	3	3	3	-
C107N	2	0	0	3	3
C109N	3	1	1	1	2
C110N	2	2	0	3	2
C112N	3	3	-	-	-
Sem:2					
C101N	3	3	3	3	3
C102N	3	3	3	3	3
C104N	3	3	3	3	-
C105N	3	3	3	3	3
C108N	3	3	3	3	3
C111N	2	2	2	2	2

CO attainment matrix for A.Y. 2020-21(CAY)

COURSE CODE	CO1	CO2	CO3	CO4	CO5
Sem:1					
C103N	3	3	3	3	3
C106N	3	3	3	3	3
C107N	3	3	3	3	3
C109N	3	3	3	3	3
C110N	2	1	3	0	1
C112N	3	3	-	-	-
Sem:2					
C101N	3	3	3	3	3
C102N	3	3	3	3	3
C104N	3	3	3	3	3
C105N	3	3	3	3	3
C108N	3	3	3	3	3
C111N	3	3	3	3	3

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

8.5.1. Indicate results of evaluation of each relevant PO

Year of study 2020-21, 2019-20 & 2018-19

Table 8.5.1.1 PO Attainment for CAYm2 2018-19

GTU Course Code	Course Code	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
3110017	**C112N**	-	-	-	-	-	2.00	-	3.00	1.00	2.00	-	1.00
3110014	**C110N**	1.00	1.00	0.73	-	-	-	-	-	-	-	-	-
3110013	**C109N**	1.75	1.10	1.67	-	0.00	0.83	-	-	-	0.00	-	0.23
3110004	**C103N**	2.40	2.00	-	-	-	2.08	-	-	2.00	-	-	1.33
3110011	**C107N**	1.07	0.67	0.50	-	0.50	-	0.56	-	-	-	-	0.53
3110007	**C106N**	2.00	1.50	-	-	-	2.75	2.75	1.50	-	2.00	-	2.00
3110005	**C104N**	1.25	1.11	0.83	0.83	0.5	-	-	-	-	-	-	-
3110006	**C105N**	3.00	1.40	-	-	-	-	-	1.00	1.00	1.60	-	-
3110003	**C102N**	1.73	1.47	1.78	1.33	-	-	-	1.00	1.17	1.33	-	1.33
3110012	**C108N**	1.40	1.33	1.67	-	1.33	1.00	1.00	1.00	-	-	-	1.00
3110015	**C111N**	1.80	1.80	1.40	-	-	-	-	-	-	-	0.60	0.60
3110002	**C101N**	-	-	-	-	-	-	-	-	-	2.00	-	1.00
Average	**Average**	**1.7**	**1.3**	**1.2**	**1.1**	**0.6**	**1.7**	**1.4**	**1.5**	**1.3**	**1.5**	**0.6**	**1.0**

Table 8.5.1.2 PO Attainment for CAYm1 2019-20

GTU Course Code	Course Code	PO 1	PO 2	PO 3	P O4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
3110017	**C112N**	-	-	-	-	-	2	-	3	1	2	-	1
3110014	**C110N**	1.80	1.80	1.53	-	-	-	-	-	-	-	-	-
3110013	**C109N**	1.50	0.67	1.00	-	2.00	1.00	-	-	-	0.67	-	0.44
3110004	**C103N**	2.40	3.00	-	-	-	2.17	-	-	3.00	-	-	1.00
3110011	**C107N**	1.07	1.00	0.50	-	0.50	-	0.67	-	-	-	-	0.53
3110007	**C106N**	2.00	1.50	-	-	-	2.75	2.75	1.50	-	2.00	-	2.00
3110005	**C104N**	2.5	2	1.5	1.5	1	-	-	-	-	-	-	-
3110006	**C105N**	3.00	1.40	-	-	-	-	-	1.00	1.00	1.60	-	-
3110003	**C102N**	2.60	2.20	2.67	2.00	-	-	-	1.50	1.75	2.00	-	2.00
3110012	**C108N**	1.40	1.33	1.67	-	1.33	1.00	1.00	1.00	-	-	-	1.00
3110015	**C111N**	2.00	2.00	1.60	-	-	-	-	-	-	-	0.67	0.67
3110002	**C101N**	-	-	-	-	-	-	-	-	-	2.00	-	1.00
Average		**2.0**	**1.7**	**1.5**	**1.8**	**1.2**	**1.8**	**1.5**	**1.6**	**1.7**	**1.7**	**0.7**	**1.1**

Table 8.5.1.3 PO Attainment for CAY 2020-21

GTU Course Code	Course Code	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
3110017	**C112N**	-	-	-	-	-	2.00	-	3.00	1.00	2.00	-	1.00
3110014	**C110N**	1.40	1.40	1.27	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
3110013	**C109N**	3.00	2.00	3.00	-	3.00	2.25	-	-	-	2.00	-	1.00
3110004	**C103N**	3.00	3.00	-	-	-	2.75	-	-	3.00	-	-	2.00
3110011	**C107N**	2.00	1.00	1.00	-	1.00	-	1.00	-	-	-	-	1.00
3110007	**C106N**	2.00	2.00	3.00	-	3.00	2.00	2.25	-	2.00	-	-	-
3110005	**C104N**	2.50	2.00	1.50	1.50	1.00	-	-	-	-	-	-	-
3110006	**C105N**	3.00	1.40	-	-	-	-	-	1.00	1.00	1.60	-	-
3110003	**C102N**	2.60	2.20	2.67	2.00	-	-	-	1.50	1.75	2.00	-	2.00
3110012	**C108N**	1.40	1.33	1.67	-	1.33	1.00	1.00	1.00	-	-	-	1.00
3110015	**C111N**	3.00	3.00	2.40	-	-	-	-	-	-	-	1.00	1.00
3110002	**C101N**	-	-	-	-	-	-	-	-	-	2.00	-	1.00
Average		**2.4**	**1.9**	**2.1**	**1.8**	**1.9**	**2.0**	**1.4**	**1.6**	**1.8**	**1.9**	**1.0**	**1.3**

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

Table 8.5.2.2 POs Attainment Levels and Actions for improvement – CAY*m2* 2018-19

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	1.5	1.7	➢ Target achieved
Action 1: Target increased to 1.6 for the next AY. **Action 2:** Remedial classes are arranged. **Action 3:** Engineering journals, magazines and books are provided in library to enhance students' application based knowledge.			
PO2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.			

PO2	1.3	1.3	➢ Target achieved
Action 1: Target increased to 1.4 for the next AY. **Action 2:** Engineering journals, magazines, books and internet facility are provided in library to enable free access to the latest trends in Engineering. **Action 3:** Case studies were given to students.			
PO3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.			
PO3	1.2	1.2	➢ Target achieved
Action 1: Target increased to 1.3 for the next AY. **Action 2:** MR Vaccination and HIV Aids awareness program was organized under NSS. **Action 3:** A 7 day NSS special Camp and Village visit were organized to make students aware about their surroundings and problems.			
PO4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.			
PO4	1.2	1.1	➢ Target not achieved ➢ Students' analytical and interpretative skills were not up to the mark due to their first encounter with engineering concepts.
Action 1: Group discussion and debate over concerned issues were organized. **Action 2:** Case studies were given to students.			
PO5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.			
PO5	1.2	0.6	➢ Target not achieved ➢ Students had very limited knowledge regarding modern engineering and IT tools.
Action 1: Some experiments were performed in Virtual Labs to get better understanding of parametric analysis. **Action 2:** For better understanding of concepts, Regular classes were supplemented by NPTEL, BISAG.			
PO6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.			
PO6	1.3	1.7	➢ Target achieved

Action 1: Target increased to 1.4 for the next AY.
Action 2: Students were encouraged to discuss and find solutions of current issues and realize their role through group discussion and group activities.
Action 3: Students were motivated to participate in various NSS activities to serve society in general.

PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO7	1.3	1.4	➢ Target achieved

Action 1: Target increased to 1.4 for the next AY.
Action 2: Activities like tree plantation, Swachh Bharat Abhiyan, Nature Education Camp at Jesore Bear Sanctuary was organized under NSS to sensitize students towards their responsibility towards environment and ecology.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO8	1.2	1.5	➢ Target achieved

Action 1: Target increased to 1.3 for the next AY.
Action 2: National 'Yoga Day', 'Teachers Day', 'Women's Day' celebrations have been organized by the college/department for last many years.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO9	1.3	1.3	➢ Target achieved

Action 1: Group projects on model making were given to students in some courses.
Action 2: Group activities were arranged under NSS Program.
Action 3: Awareness campaign, door to door visit, rally, biogas plant awareness, street cleaning in Patoshan village were organized under the aegis of Swachh Bharat Abhiyan.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO10	1.3	1.5	➢ Target achieved

Action 1: Target level increased to 1.4 for AY 2019-20.
Action 2: Activities like Book Review and Presentation were arranged to inculcate communication skill effectively.

PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.			
PO11	1.2	0.6	➢ Target not achieved ➢ Students were found poor in management and leadership
Action 1: Students were encouraged to organize various technical and non-technical events. **Action 2:** Student leadership was encouraged at college level activities and functions.			

PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.			
PO12	1.2	1.0	➢ Target not achieved ➢ Students were found to be more lethargic in terms of future planning owing to lack of seriousness.
Action 1: Motivational talk by Pankaj Mal, the cyclist was organized to motivate students for life long learning. **Action 2:** Students were motivated to visit library frequently to make them habituated with reading and awareness of current issues.			

Table 8.5.2.3 POs Attainment Levels and Actions for improvement – CAY*m*1 2019-20

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	1.6	2.0	➢ Target achieved
Action 1: Target increased to 1.7 for the next AY. **Action 2:** Remedial classes were arranged. **Action 3:** Engineering journals, magazines, books and internet facility were provided in library to enhance students' application based knowledge.			
PO2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.			

PO2	1.4	1.7	➢ Target achieved
Action 1: Target increased to 1.5 for the next AY. **Action 2:** Engineering journals, magazines, books and internet facility are provided in library to enable free access to the latest trends in Engineering. **Action 3:** Case studies were given to students.			
PO3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.			
PO3	1.3	1.5	➢ Target achieved
Action 1: Target increased to 1.4 for the next AY. **Action 2:** Nutrition Awareness Program for students was organized to make students realize the importance of nutrition and balance diet.			
PO4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.			
PO4	1.2	1.8	➢ Target achieved
Action 1: Target increased to 1.3 for the next AY. **Action 2:** Group discussion and debate over concerned issues were organized.			
PO5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.			
PO5	1.2	1.2	➢ Target achieved ➢ Student's knowledge of modern engineering and IT tools was still no up to the mark.
Action 1: Online teaching learning platforms like Google Meet, Webex and Google classroom were used for online delivery. **Action 2:** For better understanding of concepts, Regular classes were supplemented by NPTEL, BISAG.			
PO6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.			
PO6	1.4	1.8	➢ Target achieved

Action 1: Target increased to 1.5 for the next AY.
Action 2: Students were encouraged to discuss and find solutions of current issues and realize their role through group discussion and group activities.
Action 3: Students were motivated to participate in various NSS activities to serve society in general.

PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO7	1.4	1.5	➢ Target achieved

Action 1: Target increased to 1.5 for the next AY.
Action 2: Activities like tree plantation, Jal Shakti Abhiyan, Safai Abhiyan were organized under NSS Unit to sensitize students towards their responsibility towards environment and ecology.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO8	1.3	1.6	➢ Target achieved

Action 1: Target increased to 1.4 for the next AY.
Action 2: National 'Yoga Day', 'Teachers Day', 'Women's Day' celebrations have been organized by the college/department for last many years.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO9	1.3	1.7	➢ Target achieved

Action 1: Group projects on model making were given to students in some courses.
Action 2: Group activities were arranged under NSS Program.
Action 3: Awareness campaign, door to door visit, rally, biogas plant awareness, street cleaning in Parpada village were organized under NSS special camp.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO10	1.4	1.7	➢ Target achieved

Action 1: Target level increased to 1.5 for AY 2019-20.
Action 2: Activities like Book Review and Presentation were arranged to inculcate communication skill effectively.

PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.			
PO11	1.2	0.7	➢ Target not achieved ➢ Students were found poor in management and leadership
Action 1: Students were encouraged to organize various technical and non-technical events. **Action 2:** Student leadership was encouraged at college level activities and functions.			

PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.			
PO12	1.2	1.1	➢ Target not achieved ➢ Students were found to be more lethargic in terms of future planning owing to lack of seriousness.
Action 1: Senior faculty members shared their life experiences, struggle and success stories to motivate students on the occasion of Teachers' Day. **Action 2:** Students were motivated to visit library frequently to make them habituated with reading and awareness of current issues.			

Table 8.5.2.3 POs Attainment Levels and Actions for improvement – CAY 2020-21

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	1.7	2.4	➢ Target achieved
Action 1: Target increased to 1.8 for the next AY. **Action 2:** Engineering journals, magazines, books and internet facility were provided in library to enhance students' application-based knowledge.			
PO2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.			
PO2	1.5	1.9	➢ Target achieved
Action 1: Target increased to 1.6 for the next AY. **Action 2:** Engineering journals, magazines, books and internet facility are provided in library to enable free access to the latest trends in Engineering.			

<table>
<tr><td colspan="4">PO3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.</td></tr>
<tr><td>PO3</td><td>1.4</td><td>2.1</td><td>➢ Target achieved</td></tr>
<tr><td colspan="4">Action 1: Target increased to 1.5 for the next AY.</td></tr>
<tr><td colspan="4">PO4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.</td></tr>
<tr><td>PO4</td><td>1.3</td><td>1.8</td><td>➢ Target achieved</td></tr>
<tr><td colspan="4">Action 1: Target increased to 1.4 for the next AY.
Action 2: Group discussion and debate over concerned issues were organized.</td></tr>
<tr><td colspan="4">PO5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.</td></tr>
<tr><td>PO5</td><td>1.2</td><td>1.9</td><td>➢ Target achieved
➢ Student’s knowledge of modern engineering and IT tools was still no up to the mark.</td></tr>
<tr><td colspan="4">Action 1: Target increased to 1.3 for the next AY.
Action 2: Online teaching learning platforms like MS Teams, Google Meet, Webex and Google classroom were used for online delivery.
Action 3: For better understanding of concepts, Regular classes were supplemented by NPTEL, BISAG.</td></tr>
<tr><td colspan="4">PO6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.</td></tr>
<tr><td>PO6</td><td>1.5</td><td>2.0</td><td>➢ Target achieved</td></tr>
<tr><td colspan="4">Action 1: Target increased to 1.6 for the next AY.
Action 2: Students were encouraged to discuss and find solutions of current issues and realize their role through group discussion and group activities.
Action 3: Students were motivated to participate in various NSS activities to serve society in general.</td></tr>
<tr><td colspan="4">PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.</td></tr>
<tr><td>PO7</td><td>1.5</td><td>1.4</td><td>➢ Target not achieved</td></tr>
</table>

Action 1: Target increased to 1.6 for the next AY.

Action 2: Activities like tree plantation, Jal Shakti Abhiyan, Safai Abhiyan were organized under NSS Unit to sensitize students towards their responsibility towards environment and ecology.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO8	1.4	1.6	➢ Target achieved

Action 1: Target increased to 1.5 for the next AY.

Action 2: National 'Yoga Day', 'Teachers Day', 'Women's Day' celebrations have been organized by the college/department for last many years.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO9	1.3	1.8	➢ Target achieved

Action 1: Group projects on model making were given to students in some courses.

Action 2: Group activities were arranged under NSS Program.

Action 3: In Institute, many functions were organized by student teams like Navratri, Praxes, Sports events, Cultural events etc…

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO10	1.5	1.9	➢ Target achieved

Action 1: Target level increased to 1.6 for AY 2019-20.

Action 2: Activities like Book Review and Presentation were arranged to inculcate communication skill effectively.

PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO11	1.2	1.0	➢ Target not achieved ➢ Students were found poor in management and leadership

Action 1: Students were encouraged to organize various technical and non-technical events.

Action 2: Student leadership was encouraged at college level activities and functions.

PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.			
PO12	1.2	1.3	➢ Target not achieved
Action 1: Senior faculty members shared their life experiences, struggle and success stories to motivate students on the occasion of Teachers' Day. **Action 2:** Students were motivated to visit library frequently to make them habituated with reading and awareness of current issues.			

9. Student Support Systems

9.1 Mentoring system to help at individual level (5)

Government Engineering College, Palanpur aims to be a leading technical institute facilitating transformation of human resources into socially responsible engineering professionals for sustainable development. To achieve this aim we are committed to provide endless support to our students for their overall development.

The institute has an effective system for mentoring/counselling and academic monitoring of the students. The academic and non-academic mentoring/counselling of the students are carried out at all level starting from their entry to exit from the institute through respective Class Coordinators, Course Coordinators/Course Teachers and Portfolio Conveners. The structure of the academic and non-academic mentoring/counselling of the students is shown in Fig. 9.1.

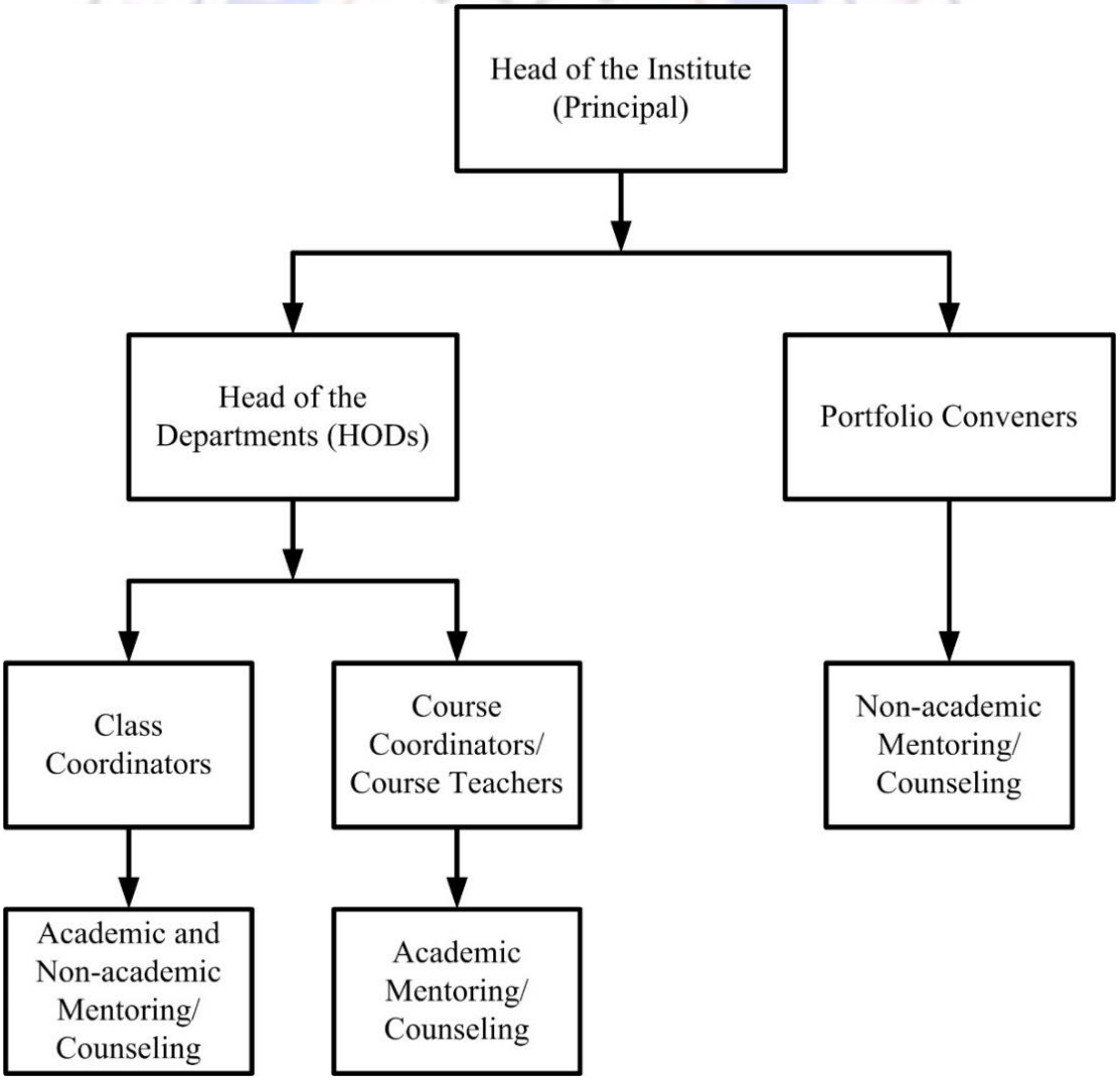

Fig. 9.1 Structure of academic and non-academic mentoring/counseling

- According to the policy, each class of students in each department has been allotted two faculties who are working as "Class Coordinators". These Class Coordinators perform as a counsellor/mentor and monitor the academic/non-academic records of their allotted class. They maintain the report card of the students which contains the information such as name, address, contact details, year and type of admission, photo, accommodation, academic performance, scholastic & co-scholastic area related information, etc.

- For the overall development of the students, the class coordinators ensure students participations in various academic and non-academic activities. He/She also identifies the unique talent of a student during his/her counselling/mentoring sessions.

- Based on the inputs received from the respective Course Coordinators/Teachers, the Class Coordinators also take regular follow-ups regarding the student's attendance, and contact their parents if necessary.

- The class coordinators along with the Course Coordinators/Course Teachers and time-table convener of respective department plan a schedule of progressive assessment activities in accordance with the HOD instructions.

- The Course Coordinator/subject teacher helps students to solve their technical queries related to his/her allotted subjects. Further, the course coordinator/teacher identifies the students whose academic performance is "weak" and counsel them accordingly. He/She also arrange a remedial class for the students as per need.

The respective head of the department monitors all above activities regularly and take necessary corrective measures.

- For the overall development of the students, the non-academic mentoring/counseling has also been carried out in the institute at various stage of their graduation by arranging various activities which helps students at an individual level to enhance his/her personal and professional development. These activities are planned and conducted by respective portfolio conveners, and the head of the institution monitors all such activities regularly and take necessary corrective measures.

The mentoring/counseling activities of the institute are briefly discussed in the below-given Table 9.1.

Table 9.1 Mentoring/Counseling activities and its objectives

Sr. No.	Type of Activity	Objectives of the activity
1	Orientation program for first year students	• To impart information about the vision & mission of the institute/program, faculty members and teaching/examination scheme of GTU, etc. to the newly admitted students. • To motivate students by experts so that they will be able to carry out their study and other activities without hesitation. • To make them familiar with the campus, departments, laboratories, library and other facilities through a guided tour by faculty members.
2	Induction program for first year students	• To create an environment for the newly admitted first year students so that they feel comfortable in the campus. • To allow students to create bonding with the other students and faculty members. • To provide opportunities to the students to find their interest, explore their inner beings and get a broader view of life and practice human values to build their character as a socially responsible profession.
3	Personal and Professional development	• To empower and enable inner-adjustments of the students so that they can counter and cope with the physical, mental, emotional, social and environmental challenges. • To encourage students to discuss their ideas and presentations. • To stimulate students' thinking towards innovation in projects. • To enhance technical competencies of the students through the technical workshops, industrial visit etc. • To motivate students to upgrade their domain knowledge through consistent usage of technical literature. • To arrange seminar/workshops/activities which enhance the student personal and professional development. • To allow students to participate in the events/activities to be conducted in the institute and at other institute, and provide them academic, administrative and financial support as per the institute norms.

4	Academic guidance	• To share the academic calendar, academic planners, e-resources for learning. • To identify the students having poor attendance in theory and practical classes and counsel them to attend all academic activities regularly. • To arrange remedial classes of both theory and practical sessions for the academically weak students and counsel them to improve their academic performance.
5	Career advancement	• To encourage students to participate in the competitive exams. • To arrange seminar/workshops for providing career related guidance to the students. • To encourage students to take part in the professional courses to shape their career. • To arrange seminar/workshops/training for enhancing the personal and professional skills of the students so that they can participate in the institute/state/national level placement related activities.
6	All-round development	• To provide infrastructure and resource supports to the students to conduct various cultural, social and sports related activities which leads them towards all-round development. • To arrange events/activities for providing opportunities to the students to enhance/develop managerial skills, leadership quality, decision making abilities, team work, socio-phycological awareness, etc. • To allow students to participate in the events/activities to be conducted in the institute and at other institute and provide them academic, administrative and financial support as per the institute norms.
7	Financial and administrative assistance	• To implement the state/central government schemes for the benefits of the students and provide them an administrative support. • To sensitize the students to take benefits of the prevalent scholarship schemes, tablet scheme, MYSY scheme, hostel food bill waiver scheme, tuition fees waiver scheme, etc. as provided by the state/central government.
Total number of faculty mentors: 28		
Each student is allotted a faculty mentor who mentors/counsels them regularly and maintains all academic/non-academic details of the students.		
Number of students per mentor		30 (Approximately)
Frequency of meeting		Twice in a semester, also based on student's need

Efficacy:

- The student's participations in various academic and non-academic activities are increased.

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

Table 9.2.1 Student Feedback System

Feedback collected for all courses:	YES
Feedback receiver:	HOD
Feedback collection process:	• All the students are encouraged to give feedback. • The student feedback collection mechanism is well-organized in the institute. The student feedback is collected in the hardcopy or through online forms. The feedback collection is accomplished by respective Class Coordinator. After receiving the student feedback, the Class Coordinator analyze it and submit it to the respective HOD. The HOD along with the Principal is taking corrective measures/actions
Purpose:	To improve the overall academic performance of the faculty/department.
Average Percentage of students who participate:	>60%
Feedback analysis process:	Manually/analysis through MS-Excel
Indices used for measuring quality of teaching & learning	Feedback form designed by AICTE is implemented to collect student feedback. The following indices are incorporated in the feedback form: • Covering of entire syllabus • Covering of topics beyond syllabus • Effectiveness of teaching in terms of course content, communication skill and use of teaching aids. • Pace on content covering • Providing motivation and inspiration to students. • Support for the development of student skill such as practical demonstration and hands-on training. • Clarity of student's expectation • Providing feedback on student progress • Willingness to offer help and advise to the
Matrices used for calculation	5: Excellent 4: Very Good 3: Good 2: Poor 1: Very Poor
Frequency of feedback collection	At least once in a semester (but the oral feedback from the Class Coordinator is taken by HOD almost every month)

Corrective actions taken in last 3 years:	1. To improve the overall academic performance of the program, the faculty members are advised • To use multi-media platforms to make their class more effective. • To arrange extra classes for the students whose performance is observed as weak. • To help students in their curriculum related activities and motivate them to improve their communication skill. 2. To increase the industry interaction, a greater number of industrial visits were arranged. Students were also motivated to undergo internship during the semester break. 3. To improve the placement, the special session/seminar on finishing schools, personality development and career guidance were arranged.
Basis of reward/corrective measures	
System of reward process: • Student feedback (Format enclosed as Fig. 9.2.1) • Faculty's self-appraisal report • HOD's evaluation • The marks given by HOD is reviewed by Principal. **Reward:** • Higher marks will be given in Performance Appraisal Report (PAR) of individual faculty member, which helps faculty	**Corrective measures:** • In case of poor feedback of faculty member, he/she is called before HOD & Principal and asked to improve his/her performance during the subsequent semesters. If he/she does not improve further, it is reflected in his/her PAR. • The faculty members are regularly deputed for attending the FDPs/STTPs to improve knowledge and teaching skills.
Number of corrective measures:	The faculty members with average feedback were called by HOD and informed about his/her feedback report. They were asked to improve their performance in subsequent semesters. The faculty members were deputed for induction training program and FDPs in the relevant areas to improve their overall performance and knowledge upgradation.

Fig. 9.2.1 Student Feedback Form

GOVERNMENT ENGINEERING COLLEGE, PALANPUR (GTU Code: 061)

Academic Year: _____, Semester: _____

STUDENT FEEDBACK FORM

DEPARTMENT: NAME OF FACULY:

DATE OF FEEDBACK: SUBJECT WITH CODE:

Sr. No.	Descriptions	Rating [Excellent-5; Very Good-4; Good-3; Poor-2; Very Poor-1]				
		Very Poor	Poor	Good	Very Good	Excellent
1	Has the Teacher covered entire syllabus as prescribe by University					
2	Has the Teacher covered relavant topics beyond syllabus					
3	Effectivness of Teacher in terms of: a. Technical Content/Course Content b. Communication skills c. Use of teaching aids					
4	Pace on which content were covered					
5	Motivation & inspiration for students to learn					
6	Support for the development of students skill a. Practical demonstration b. Hands-on training					
7	Clarity of expectation of students					
8	Feedback provided on students progress					
9	Willingness to offer help and advice to students					
	TOTAL					

9.3 Feedback on facilities (5)

The feedback is collected from the students on the infrastructure, resources and facilities available in the class room, laboratory, library, canteen, playground, and other premises of the institute.

The feedback is analyzed and the necessary corrective measures are implemented after discussion with the higher authority.

Table 9.3.1 Feedback and Corrective action

Feedback	Corrective Action
Canteen/Garden should be clean	Appropriate actions were taken to resolve the issues by appointing outsourcing agencies for cleanliness work
Fans are not working/not in good condition in the classrooms/labs	The issue has been resolved in liaison with R&B department of the State Government.
Need to improve the sport facility	The Sports tools & equipment were purchased based on recommendations of the Gymkhana Committee. Institute also celebrates sports week every year. The institute is also providing financial support to individual/team to participate in University level competitions, as per norms.
Wi-fi facility must be provided	The wi-fi facility is made available in the full campus since January-2016 with 30 Access points.
Computer with internet connection is required in the laboratories.	A computer with internet connection has been provided in the laboratories.
Drinking water f acility	The RO drinking water facility has been provided. The maintenance contract has also been given to make it fully functional.
Class rooms should be equipped with the multi-media teaching aids.	Apart from the multi-media teaching aids facility available in the seminar room of each department, at least one class room has been equipped with fixed/mobile projector along with the computer system.

Fig 9.3.1 Feedback Form for Facilities

GOVERNMENT ENGINEERING COLLEGE, PALANPUR

Student's Feedback on Facilities

B. E.: _____; Semester: _____

Academic Year: _____; Date: _____

Directions: For each parameter please indicate your level of satisfaction by providing qualitative rating on the scale of 1 to 5. (**1: Very poor, 2: Poor, 3: Good, 4: Very good, 5: Excellent)**

Sr. No.	Parameter	Response of the student
1	Library is equipped with sufficient number of text books and reference books.	
2	Sufficient reading room/facilities is available in the library	
3	The library staff are cooperative and helpful.	
4	Reprography facility is available in the library/institute and is adequate	
5	Internet facility of the library/department/campus	
6	Quality of high-speed internet facility in the campus	
7	Availability and accessibility of online educational resources	
8	Support of office staff and lab staff	
9	Display of result and attendance record on time	
10	Toilet/washrooms are hygienic and are cleaned regularly	
11	Availability of purified drinking water in the department and campus	
12	Grievances/problems are addressed effectively and solved well in time.	
13	Functioning of T&P Cell of the institute is satisfactory.	
14	Equipment in the laboratories are in working condition.	
15	Campus is green and eco-friendly.	
16	Buildings/classrooms are easily accessible to differently-abled persons	
17	Classrooms are cleaned and well-maintained.	
18	Campus has adequate power supply	

Any other suggestion/comment: _____

_____

_____

_____

Name of the student (Optional): _____

Enrolment No. (Optional): _____

9.4 Self-Learning (5)

The self-learning allows students to go beyond simply learning what their class text books and instructors teach them. It ensures that the students learn outside the formal systems thereby giving them more flexibility and freedom to explore new avenue of learning. One of the major benefits of self-learning is that students can take control over their own learning so that they become even more interested in learning.

Facilities, Material and Scope for Self-learning:

At GEC, Palanpur, we conduct many activities and provide many resources to our students which enables them to acquire additional knowledge through self-learning, and leads the whole ecosystem which creates socially responsible engineering professionals.

1. To increase the subject domain knowledge and to learn the contents beyond syllabus, the faculty members are giving active learning assignments/case studies/mini projects to the students, regularly. Also, the expert lecture and study/industrial visit are arranged to enhance such activities.

2. The institute has high speed 100 Mbps internet connectivity with 550 nodes spread across the whole campus including faculty/staff cabins, library, classrooms, laboratories and other parts of the campus. The institute also has a good connectivity of wi-fi with 30 access points, out of which 7 access points belong to the NAMO wi-fi of 20 Mbps.

3. The faculty members motivate students to take maximum benefits of internet facility available in the institute to learn contents from different resources, which encourages diverse ways to create self-learning environment. The students are motivated to use following learning materials/facilities:

- NPTEL video lectures
- State-level telecasted video lectures (Managed by "Knowledge Consortium of Gujarat (KCG)"/BISAG)
- Licensed software such as MATLAB, ANSYS
- Open source software such as Scilab, Python, Autodesk packages, C++, etc.
- Digital Library (through GTU portal, National Digital Library, etc.)
- Virtual lab developed by leading institute of the country
- Language lab facility

4. In the context of "Digital Gujarat" scheme of the state government, all the first-year students are offered to avail the branded tablet at nominal price of INR 1000/- to enhance their e-learning/self-learning capability.

5. As per AICTE norms, the institute regularly subscribes the good quality journals and the students have free access to it in the library.

6. The "Design Lab" of worth INR 25 Lac has been established in the institute and is fully available to all the students of the institute. This lab has been sponsored by "Gujarat Council on Science & Technology (GUJCOST)" during the year 2017-18 with an objective of creating a culture of innovation throughout the state by fostering creativity and innovative imagination of the students and researchers. It provides opportunity and platform to the student with innovative mindset to work with tools and equipment to transform his/her idea into the product.

7. The GTU has introduced a unique "100-Activity Point" scheme for earning the Engineering Degree from it in the beginning of the academic year 2015-16. According to this scheme/rule, any B.E. students from any institute affiliated to the GTU will be honored the Engineering Degree if he/she earns the minimum 100 activity points during his/her total academic tenure, and these points are reflected in the student's transcript also. The ultimate objective of this scheme it to prepare the student as per the need of industry and society. The students achieve the target points through participation in various technical, non-technical and managerial activities. By participating into various events, students have opportunities to develop leadership quality and ability to work in team, to understand the needs of the society & community, and to bring innovation & creativity to their work. Along with this, the GTU also arranges many webinars, seminars, workshops, trainings, etc. which are notified to the institutions in advance, and the faculty members encourage students to take part into these events.

8. The students also have opportunities to take out their multifarious talents by taking participation into various technical and non-technical activities which are organized during the annual technical and cultural festival of the institute.

9. The institute arranges seminar on "Life building, Career guidance, GATE awareness, Personality development, Drub abuse", etc. and conducts activities such as "Tree plantation, Blood donation camp", etc., regularly, and provides opportunities to its students to become a socially responsible engineering professional.

10. The Government of Gujarat has developed a "Student Startup and Innovation Policy (SSIP)" policy for promoting and providing assistance to startups/innovation. Under this scheme, in the institute, the students who have new/innovative concept/idea can present his/her concept/idea among the SSIP cell. The SSIP cell checks the feasibility of the student's concept/idea, provide him/her a technical guidance and offers a chance to reach to the PoC (Proof of Concept) stage. After peer review by an expert committee, which comprises of the industry and academic experts, the concept/idea of the students is provided a financial and technical assistance to grow further. As of today, at GEC Palanpur, 13 projects have been technically assisted and funded more than INR 2, 86, 360/-.

11. The institute organizes "Induction Program" every year for the newly admitted first year students and tries to create an environment for the students so that they feel comfortable, find their interest and explore their inner beings, create bonding with the other students and faculty members, get a broader view of life and practice human values to build their character. The institute schedule the "Induction Program" of total 15 days (90 hours) in first 3 weeks before commencement of Semester I, and it covers the following 8 modules: (i) physical activities, (ii) creative arts, (iii) universal human values, (iv) literary, (v) proficiency, (vi) lecture by eminent people, (vii) visit to local areas or industry, and (viii) innovations.

9.5 Career Guidance, Training, Placement (10)

The Training and Placement (T&P) Cell of the institute has been operational with the following objectives:

- To provide counseling to the students for their career development.
- To enhance the personal and professional development of the students by arranging special training sessions such as finishing school.
- To provide placement opportunities to the students by arranging campus placement drives.

Placement team:

All the activities related to the T&P Cell are coordinated by Prof. P. C. Vasani. He is assisted by the following departmental coordinators: Prof. N. A. Patel (MED), Prof. G. M. Savaliya (CED), Prof. H. V. Hirvaniya (EED) and Prof. S. L. Modi (MNED).

The students from each department are also actively involved in the T&P Cell activities such as arranging pre-placement orientation sessions, placement fair, finishing school program, etc.

Infrastructure:

The conference hall of the administrative building and departmental cabins are utilized for conducting personal interviews. Also, 4 seminar halls each having seating capacity of 100 are used for conducting training sessions and other activities of the T&P Cell.

Placement portal:

The institute has developed its own placement portal which can be accessed directly or through institute web-portal. It is incorporated with the latest information of the name, address and contact details of the T&P Cell.

Apart from this, the institute is also officially registered on the placement cell portal of the Education Department, Government of Gujarat which is managed by the Knowledge Consortium of Gujarat (KCG). This portal is used for the mega events like placement fair.

Approach:

- Placement cell is very keen to increase placements every year and expand industry contacts. Efforts for the same are made by placement cell as well as at faculty level.
- Placement cell initiates placements by inviting recruiters through invitation email or letter to companies or by communicating over telephone and personal meetings.
- Faculties from departments are also contributing via referring companies/person in their contacts. Placement coordinators do visit company in person and discuss as well as invite companies to hire students from the institute.
- Department placement coordinators along with respective HOD also make efforts to liaison with industries at their level in addition to the placement cell activities.
- The students are exposed to the process of placement by conducting mock interviews, group discussion, etc. through finishing school program.
- Apart from above activities, the placement cell also conducts workshops, training modules and awareness programs for the benefit of the students.

Major Recruiting partners:

Institute has now become center of attraction for many recruiters. Some of the major companies that visited the campus for recruitment this year are mentioned below:

- J. B. India Pvt. Ltd.
- Vasant Fabricators Pvt. Ltd.
- V. M. Industries
- ICICI Bank (ITM)
- Sai Villa Dream House Pvt. Ltd.
- Khodiyar CAD Center Pvt. Ltd.
- Sai CAD
- Guru Fab Industries
- Nilkanth Auto Care
- Pramukh Job Consultancy
- Riya Hyundai
- Vestige Marketing Pvt. Ltd.

Career guidance & counseling for higher studies:

The institute provides career guidance to the students through efforts of T&P Cell and Skill Development/Finishing school program Cell in coordination with respective departments. The Skill Development/Finishing School program Cell organizes seminar/workshop to enhance the employability skill, presentation skill, group discussion skill, etc. of the students. The faculty members provide guidance to the students aspiring for Government job/GATE/PSU's and other such competitive examinations.

Finishing School Program

It is an "Employability Enhancement Initiative" of the Education Department, Government of Gujarat for imparting training on skill development for the students of Higher and Technical Education to make them Industry-ready.

The institute organize finishing school program for the final year students, every year. In this program students are trained for life skills, employability skills, english functional skills, etc. The expert trainers empaneled by the Knowledge Consortium of Gujarat (KCG) train the students for professional ethics, grooming & personal hygiene, body language, time management & punctuality, interview skills, efficiency, cover letter, email writing, resume/CV writing, presentation skills, group discussions, planning & organizational skills, leadership skills, etc. The finishing school program conducted during the year 2017-18, 2018-19, 2019-20 and 2020-21 are summarized in Table 9.5.1, Table 9.5.2, Table 9.5.3 and Table 9.5.4 respectively.

Table 9.5.1 Finishing School Program Conducted during year 2017-18

Sr. No.	Name of Program/Training	Start Date	End Date	No. of Beneficiary				Total
				MED	CED	EED	MNED	
1	Finishing School Program First Phase of 25 hours	28/08/2017	01/09/2017	28	40	39	6	113
2	Finishing School Program Second Phase of 25 hours	18/09/2017	22/09/2017	11	29	31	5	76

Table 9.5.2 Finishing School Program Conducted during year 2018-19

Sr. No.	Name of Program/Training	Start Date	End Date	No. of Beneficiary				Total
				MED	CED	EED	MNED	
1	Finishing School Program First Phase of 25 hours for Batch No. 8, 9 and 10	28/05/2018	02/06/2018	39	32	19	1	91
2	Finishing School Program First Phase of 25 hours for Batch No. 11, 12 and 13	02/07/2018	07/07/2018	37	35	48	26	146
3	Finishing School Program Second Phase of 25 hours for Batch No. 11, 12, and 13	08/10/2018	12/10/2018	37	35	48	26	146
4	Finishing School Program Second Phase of 25 hours for Batch No. 8	17/12/2018	21/12/2018	0	32	0	0	32

Table 9.5.3 Finishing School Program Conducted during year 2019-20

Sr. No.	Name of Program/Training	Start Date	End Date	No. of Beneficiary				Total
				MED	CED	EED	MNED	
1	Finishing School Program First Phase of 20 hours for Batch No. 14, 15, 16 and 17	09/12/2019	13/12/2019	57	62	48	29	196

Table 9.5.4 Finishing School Program Conducted during year 2020-21

Sr. No.	Name of Program/Training	Start Date	End Date	No. of Beneficiary				Total
				MED	CED	EED	MNED	
1	Finishing School Program First Phase of 20 hours for Batch No. 18, 19, 20 and 21	15/12/2020	14/12/2020	55	54	61	21	191
2	Finishing School Program Second Phase of 20 hours for Batch No. 18, 19 and 20	10/05/2021	20/05/2021	39	45	48	12	144

Industry interaction:

The institute encourages industry-interaction by the following ways:

- Every department encourages students for internship and industrial training at the end of the third year or even at the end of semester break. The administrative support to the students is provide in this matter from the department/institute.
- The suggestions of alumni working in different industries at different level are taken.
- The expert lectures on various technical and pedagogy aspects has been arranged from industry experts.
- Some of the student's carryout final year project in the industry i.e. Industry Defined Problems (IDP). During the internship or by visiting various industries, students interact with industry personnel and tries to identify the problems faced by them. During their project work, particularly for the IDP projects, students regularly visit the industries for various purposes such as to take guidance, data collection, testing, etc.
- Students participate in technical events organized by our institute, university and other institutes/universities.
- RUSA (Rashtriya Uchchatar Shiksha Abhiyan) is centrally sponsored scheme launched by the MHRD. The Government Engineering College, Palanpur is a beneficiary of a grant under the RUSA scheme. (Component 9: Equity Initiative and Component 12: Vocationalization of Higher Education). The main objective of Component-9 is to ensure a 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 cell, conducting remedial classes, gender sensitization campaigns, gender counseling, and introducing innovative schemes for mentoring the girl child. Since the starting of the scheme, several workshops/seminars and programs were organized for health and fitness, personality development, etc. A book bank has also been established under this scheme. 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 on its way to utilize the funds in a manner so that the objectives are satisfactorily fulfilled. The Gujarat Knowledge Society (GKS) Gandhinagar has an MoU with Indo German Tool Room (IGTR) Ahmedabad. Under this scheme, the course of "ANSYS Software" for a duration of 96 hours was conducted. In association with IGTR, there are more programs to be conducted.

9.6 Entrepreneurship Cell (5)

The Government Engineering College, Palanpur has its own Entrepreneurship Development Cell (EDC), since July 01, 2017. The main objective of the EDC is to motivate and sensitize the students to inculcate entrepreneurship skills, which leads them towards to be an entrepreneur. The EDC guides students to become a job giver instead of job seeker so that they can contribute to GDP of the country. The EDC also promotes faculty members to attend "Faculty Development Program (FDP)" at various institute/organization.

As on December 19, 2017, the Centre for Entrepreneurship Development (CED), Ahmedabad agreed to support us as knowledge partner and endorsed us as a regional centre for the business counselling and other entrepreneurship related activities.

The CED organizes various awareness programs for the potential and interested students to make them aware about latest State and Central Government funding schemes.

Apart from the efforts of the EDC, all departments of the institute maintain information about their graduated students who became a successful entrepreneur. This detail helps us improving the student's placement.

Table 9.6.1 Activities conducted under EDC in collaboration with the CED

Sr. No.	Activity	Date	Location	No. of Beneficiaries	Remark
1	Training of Trainers (ToT) at CED, Naroda	23/01/2018	CED, Naroda, Ahmedabad	3	Faculty members present in one day session
2	Training of MIS for EDC at CED, Naroda	14/09/2018	CED, Naroda, Ahmedabad	1	Faculty member present in one day session
3	Entrepreneurship Development Program Module-II	09/04/2019 to 25/04/2019	GEC, Palanpur	30	Final year students of Mechanical Engineering
4	Human Resources Development	21/12/2019	GEC, Palanpur	43	All faculty members present in one day session

Student Startup and Innovation Policy:

The Government of Gujarat has developed a "Student Startup and Innovation Policy (SSIP)" policy for promoting and providing assistance to startups/innovation. Under this scheme, in the institute, the students who have new/innovative concept/idea can present his/her concept/idea among the SSIP cell. The SSIP cell checks the feasibility of the student's concept/idea, provide him/her a technical guidance and offers a chance to reach to the PoC (Proof of Concept) stage. After peer review by an expert committee, which comprises of the industry and academic experts, the concept/idea of the students is provided a financial and technical assistance to grow further. As of today, at GEC Palanpur, 13 projects have been technically assisted and funded more than INR 2, 86, 360/-.

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

The institute offers many opportunities to the students to take out their talents in the activities of their interest by providing immense infrastructure and resources support. Student's participation in the extra-activities, along with the academics, shapes their career more effectively. All such activities are conducted and managed by the following committees/cell.

(i) Institute Induction Program Cell (IIPC)
(ii) National Service Scheme (NSS)
(iii) National Cadet Corps (NCC)
(iv) Gymkhana Committee

9.7.1 Institute Induction Program Cell

The goal of induction program is to train engineering students to have holistic personality and solve problems of the society and nation using modern technology and practices of engineering education. It is very essential to cultivate the human values in engineering graduates to fulfil his responsibilities as an engineer, a citizen and a human being.

The institute organizes "Induction Program", as suggested by the AICTE and GTU, every year for the newly admitted first year students, since 2018. The main objectives of the program are:

- To create a comfortable environment for the students in campus
- To allow them to find their interest and explore their inner beings
- To create bonding with other students and faculty/staff members
- To work for the excellence
- To get a broader view of life
- To practice human values to build their character as a socially responsible professional.

To fulfill the above objectives, the induction program is scheduled for total 15 days (90 hours) during first three weeks before the commencement of Semester I and performed following eight activity modules: (i) physical activities, (ii) creative arts, (iii) universal human values, (iv) literary, (v) proficiency, (vi) lectures by eminent people, (vii) visit to local area or industry, and (viii) innovations. The detailed schedule of the induction program followed in the institute is given in Table 9.7.1.

Table 9.7.1 Detailed Schedule of the Induction Program

Sr. No.	Phase and Activities Heads	Weightage

1.	Initial Phase	1 day (6 hours)
2.	Regular Phase	13 Days
a)	Physical activity	24 hours
b)	Creative Arts	12 hours
c)	Universal Human Values	12 hours
d)	Literary	12 hours
e)	Proficiency Modules	6 hours
f)	Lectures by Eminent People	3 Expert Lectures (1 hour each), (total 3 hours)
g)	Visits to local Areas or Industry	1 Day (6 hours)
h)	Innovations	3 hours
3.	Closing Phase	1 Day (6 hours)
	Total	**90 hours**

The conduction of above activities motivates students to perform well in their chosen branch of admission and imparts them a human and social values which enhance their all-round development.

All the activities related to IIPC are coordinated by Prof. A. D. Patel. He is assisted by the following faculty members: Prof. K. G. Prajapati, Prof. S. G. Chauhan and Prof. J. V. Modi.

9.7.2 National Service Scheme (NSS)

The National Service Scheme is a central sector scheme of Government of India, under the Ministry of Youth Affairs & Sports. It provides opportunities to the students to take part in various government led community service activities & programs. The ultimate objective of the NSS scheme is to provide hands on experience to young students in delivering community services. The motto of NSS scheme is "NOT ME, BUT YOU".

The NSS unit of the institute was established in the year 2017. The unit has total 100 volunteers. The details of the advisory committee of the NSS unit at GEC Palanpur is given in Table 9.7.2. However, all the activities related to NSS unit have been coordinated by Prof. C. G. Prajapati and Prof. V. K. Patel.

Table 9.7.2 Advisory Committee of NSS unit at GEC Palanpur

Sr. No.	**Name**	**Designation**	**Position**
1	Dr. K. B. Judal	Chairman	Chairman
2	Dr. C. G. Prajapati	Member Secretary	Member Secretary
3	Prof. D. A. Patel	Member	Member
4	Dr. K. M. Korot	Member	Member

5	Shri Pooravbha Modi	Social Worker	Social Worker
6	Smt. Viraliben Modh	Officer, DRDA, Palanpur	Rural Development Officer
7	Mr. Nilesh Prajapati	NSS volunteer, Batch:2018-19	NSS Volunteer
8	Mr. Mitanshu Patel	NSS volunteer, Batch: 2019-20	NSS Volunteer

The NSS unit of GEC Palanpur is one of the most active units of the affiliated university, GTU, and the following facts validates it.

- The NSS unit of the institute won "Best NSS Unit" award in the year 2017-18, at university level.
- Our NSS volunteer Mr. Mahendra Ladumor has commendably participated in the "NSS Republic Day Parade Camp" at New Delhi from January 01 to 31, 2019, and performed parade at Rajpath, New Delhi on January 26, 2019.
- Our NSS volunteer Mr. Nilesh Prajapati performed in the parade conducted at State-level Republic Day celebration in Rajkot city of Gujarat state on January 26, 2020.

The activities conducted by NSS unit of the institute during the year 2017-18, 2018-19, 2019-20 and 2020-21 are summarized below in the Table 9.7.3, Table 9.7.4, Table 9.7.5 and Table 9.7.6, respectively.

Table 9.7.3 NSS Activities during year 2017-18

Sr. No.	Date	Name of activity/event	Description	Name of Coordinator	No. of Participants	No. of Volunteers
1	04-07-2017	Tree Plantation	Volunteers and Staff planted about 50 trees in the campus.	Jitendra Gehlot	45	23
2	10-07-2017	Seminar on Improving Memory Power	Volunteers and students took benefits along with the faculty/staff members	Druvi Soni and Parth Limbachiya	180	30
3	27-07-2017 to 31-07-2017	Flood Relief Program	Volunteers served the affected people from the flood	Rahil Sindhi and Jitendra Gehlot	45	25
4	04-08-2017	DDT Spreading Program	Volunteers spread DDT at College, Bhagal Village and Jagana Bus	Parth Limbachiya and Jitendra Gehlot	30	30

			stand.			
5	05-08-2017	Celebration of Raksha-bandhan	Celebrated in collaboration with "Brahma-kumaris", a spiritual organization	Mili Mevada	70	25
6	10-08-2017	Value based Education workshop	Volunteers and students took benefits along with the faculty/staff members	Parth Limbachiya and Jitendra Gehlot	140	27
7	22-08-2017	Seminar on "Fearless Life and Personality Development"	Speech delivered by Mr. Sanjay Raval	Chitra Joshi and Jitendra Gehlot	240	30
8	23-08-2017	Seminar on "Self-realization and De-addiction"	Mr. Hemrajbhai Juva and Retired Dy.SP. Mr. R. H. Chaudhary handled the session	Parth Limbachiya	90	24
9	24-08-2017	Ayurvedic Pey (Kadha) Program for Swine-Flu	To boost immunity in the monsoon, Ayurvedic Pey (Kadha) served to the students and faculty/staff members	Jitendra Gehlot and Parth Limbachiya	160	28
10	24-08-2017	Awareness on "PM Suraxa Bima Yojana (PMSBY)"	The volunteers made aware about the PMSBY	Mili Mevada	35	35
11	01-09-2017	Fire-safety Awareness Program	The students and faculty/staff members made aware about operation of Fire-	Dhara Parmar	110	32

			extinguisher			
12	02-09-2017 to 04-09-2017	Bhadaravi Poonam Seva camp	The first-aid and energy drink served to the pilgrims for 3 days.	Jitendra Gehlot and Jay Lachhvani	40	30
13	12-10-2017	Rog Bhagao Program	Made the people of Vedancha village aware about how to save from diseases	Jitendra Gehlot and Jay Lachhvani	150	30
14	22-01-2018 to 28-01-2018	NSS Seven Day Special Camp at hoda village	Performed different activities like education for the School students, safai abhiyan, bakery program, rogbhagavo program, cultural events, drama; Door to door visit for awareness of different campaign like gobar gas plant, natural fertilizer, maintain Cleanliness, etc.	Jitendra Gehlot, Kiran Desai, Harshil Prajapati and Parth Limbachiya	35	35
15	02-02-2018	Road Safety Awareness Program	Shri Amit Khatri from RTO, Palanpur delivered a lecture to make the students	Chirag Khatri	170	28

			aware about road-safety			
16	07-03-2018	Blood Donation Camp (BDC)	BDC organized in collaboration with the Civil Hospital, Palanpur. Total 100 blood bottles donated	Jitendra Gehlot and Parth Limbachiya	120	30
17	08-03-2018	Celebration of International Women Day (IWD)	A program was arranged for women Empowerment	Mili Mevada	130	25
18	12-03-2018	Collection of Sainik Welfare Fund	Total amount of INR 6285/- collected from the institute and donated.	---	400	32
19	05-04-2018	Seminar on Life Building and Career Guidance	Students made aware about the topic. The session was followed by the experience sharing of successful candidates who clear the GPSC exams.	Jitendra Gehlot	180	32
20	16-04-2018	Seminar on Operation Clean Money	Conducted in collaboration with the IT Department	Jitendra Gehlot	140	27
21	21-06-2018	Celebration of International Yoga Day (IYD)	IYD celebrated by the faculty/staff members and students.	Harshil Prajapati	60	30

22	26-06-2018	Drug Abuse Program	Students made aware about the cause and harmful effects of the addiction.	Jitendra Gehlot	70	55
Achievement						
The NSS unit of the institute won "Best NSS Unit" award in the year 2017-18, at university level.						

Table 9.7.4 NSS Activities during year 2018-19

Sr. No.	Date	Name of activity/event	Description	Name of Coordinator	No. of Participants	No. of Volunteers
1	01-07-2018 to 31-07-2018	Swachh Bharat Summer Internship	Activities performed and made the people of Hoda and Patosan village aware about the mission	Harshil Prajapati	60	60
2	16-07-2018 to 30-07-2018	MR Vaccination and Immunization Program	Volunteers participated in vaccination program in association with the Civil Hospital, Palanpur.	Vishal Raval	40	40
3	23-07-2018	Rescue Operation and Disaster Management Program	Awareness session conducted in collaboration with District Disaster Management, Collectorate - Palanpur	Harshil Prajapati	170	20
4	25-07-2018	Tree Plantation	Volunteers, students and faculty/staff members planted around 100	Jitendra Gehlot	90	60

			trees in the institute and hostel campus			
5	26-07-2018	Celebration of Kargil Vijay Divas	Celebrated to remember martyrs through documentary and patriotic songs.	Manoj Bhanusali	150	55
6	08-08-2018	Blood Donation Camp	BDC organized in collaboration with the Civil Hospital, Palanpur. Total 80 blood bottles donated	Jitendra Gehlot and Jay Lachhvani	95	45
7	14-08-2018	International Peace Day and Nuclear Week	Made the students aware about the event with historical information	Tanvi Mevada	160	35
8	15-08-2018	Celebration of Independence Day	NSS Volunteers performed drama and parade at the event	Nikhil Luhar	150	40
9	12-09-2018	Awareness campaign on HIV-AIDS.	Awareness spread among the students about HIV-AIDS in association with AIDS team, Civil Hospital	Dhruvi Soni	95	30
10	18-09-2018	Maru Palanpur Swachh Palanpur abhiyan	NSS unit performed safai and rally in the city in association	Himanshu Parmar	400	42

			with the other social service group			
11	21-09-2018 to 22-09-2018	Bhadaravi Poonam Seva camp	The first-aid and energy drink served to the pilgrims for 3 days.	Jitendra Gehlot and Parth Limbachiya	50	30
12	31-10-2018	Celebration of Rashtriya Ekta Divas	Volunteers and participants took sapath and joined the march at Palanpur	Nilesh Prajapati	80	20
13	26-11-2018	Celebration of Indian Constitution Day	The students made aware about the preamble of the Constitution by the Principal	Jitendra Gehlot	100	30
14	11-12-2018	Awareness program on Indian Post Payment Bank	Session organized in collaboration with Post Office, Palanpur and the participants made aware about various schemes	Parth Limbachiya	120	32
15	17-12-2018 to 19-12-2018	Nature Education Camp at Jassor sloth-bear Sanctuary	Participants made aware about the nature preservation, different types of ayurvedic plants and animals lived in this area.	Bhavesh Gadhavi	45	45
16	08-01-2019	Motivational Seminar	Students were motivated	Parth Limbachiya	150	35

			by an expert, Pankaj Mall			
17	23-01-2019	Visit at Mahatma Mandir, Gandhinagar, Gujarat	One day visit was arranged to made students aware about the life principles of Mahatma Gandhi.	Dhruvi Soni and Jitendra Gehlot	50	50
18	21-06-2019	International Yoga Day	IYD celebrated by the faculty/staff members and students.	Nilesh Prajapati	90	30
19	27-06-2019	Celebration of International Day of Drug Abuse	Students made aware about the cause and harmful effects of the addiction.	Vishakh Nair	150	25
Achievement						
Our NSS volunteer Mr. Mahendra Ladumor has commendably participated in the "NSS Republic Day Parade Camp" at New Delhi from January 01 to 31, 2019.						

Table 9.7.5 NSS Activities during year 2019-20

Sr. No.	Date	Name of activity/event	Description	Name of Coordinator	No. of Participants	No. of Volunteers
1	06-07-2019	Tree Plantation	Around 70 plants planted in the college campus	Ayaz Kureshi	50	30
2	20-07-2019	Workshop on Disaster Management	One day workshop arranged and provided a live training for the rescue operation	Harsh	80	20

3	22-07-2019	Jalshakti Abhiyan	Arranged a lecture on Conservation of water.	Nair Vaisakh	140	20
4	26-07-2019	Celebration of Kargil Vijay Divas	Celebrated to remember martyrs through documentary and patriotic songs.	Nilesh Prajapati	100	27
5	29-07-2019	Gandhikatha	A lecture delivered by Vishvabandhu on life-story of Mahatma Gandhi	Kanji Prajapati	150	25
6	08-08-2019	Celebration of Raksha-bandhan	Celebrated in collaboration with "Brahma-kumaris", a spiritual organization	Vaisakh Nair	85	30
7	09-08-2019	Blood Donation Camp	BDC organized in collaboration with the Civil Hospital, Palanpur. Total 75 blood bottles donated	Nilesh Prajapati	100	20
8	04-08-2019	Amrut Pey (Kadha), Ayurvedic Detoxification	To boost immunity in the monsoon, Ayurvedic Pey served to the students, faculty/staff members and students of the Jagana village High	Chirag	250	24

			school			
9	17-09-2019	DDT Powder Spray Program	DDT powder sprayed around the college campus to prevent insect-borne diseases	Kanji Prajapati	25	25
10	25-09-2019	Nutrition Awareness Program	Students made aware about the importance of nutrition in collaboration with the doctors of Civil Hospital, Palanpur	Nilesh Prajapati	140	28
11	01-10-2019	EVP Program	Spreading awareness about online updating voter details	Chirag	180	30
12	02-10-2019	Celebration of150th Gandhi Jayanti	Celebrated the Gandhi Jayanti by arranging rally and safai abhiyan at Jagana village	Kanji Prajapati	150	30
13	26-11-2019	Celebration of Indian Constitution Day	Students made aware about the preamble, fundamental rights & duties, etc. of the Constitution	Vaisakh	80	25
14	02-01-2020	Career Guidance Program (Study in Abroad)	A seminar was arranged to guide the students regarding foreign study	Vaisakh	100	20
15	17-02-2020 to 23-02-2020	NSS Camp	Participants stayed at Parpada	Nilesh Prajapati	30	30

			village for 7 days and performed activities like awareness rallies, street plays, competition among school children, cultural exchange, de-addiction, etc.			
16	26-02-2020 to 03-03-2020	National Integration Camp	Two Students participated in NIC Camp at Andhra Pradesh	Nilesh Prajapati and Binal Thumar	2	2
Achievement						
Our NSS volunteer Mr. Nilesh Prajapati performed in the parade conducted at State-level Republic Day celebration in Rajkot city of Gujarat state on January 26, 2020.						

Table 9.7.6 NSS Activities during year 2020-21

Sr. No.	Date	Name of activity/event	Description	Name of Coordinator	No. of Participants	No. of Volunteers
1	17-10-2020	Webinar on Information, Education & Communication	Provide the Information, Education & Communication on COVID-19	Harsh	40	17
2	12-01-2021	Glorious Career in Defense During & After Engineering	Arranged a webinar for glorious career in Defense	Nair Vaisakh	200	25
3	10-02-2021	Awareness program on Single use plastic, water	Arranged program for Environment	Ayaz	50	10

		conservation and Swachhata	conservation.			
4	15-02-2021	Road safety awareness program	RTO and Traffic Police Palanpur aware students about the Traffic safety.	Steven Patel	60	15
5	19-02-2021	Webinar on Guiding & Experiences on Trekking, Weightlifting and Solo Travelling	Motivated students through this program.	Nilesh Prajapati	150	18
6	12-03-2021	A webinar on "India's Freedom Struggle" and "Dandi March Ek Sankalp"	A session arranged to aware students regarding "India's Freedom Struggle" and "Dandi March	Prerna	78	15
7	30-03-2021	A webinar on NEP 2020	Aware faculties and students about the National Education Policy 2020.	Nilesh Prajapati	150	25
8	21-06-2021	Celebration of International Yoga Day	Students were participated in the yoga webinar conducted by GTU	Harsh Kumar	30	16

9.7.3 National Cadet Corps (NCC)

Presently, we don't have NCC unit at our institute, so we enroll our students to 35 GUJ BN NCC Palanpur at R. R. Mehta Science College, Palanpur. In the year 2018-19, 12 cadets joined 35 GUJ BN NCC Palanpur and 9 students have successfully completed Combined Annual Training Camp (CATC) in the year 2019-20.

We are in the process of establishing a new Technical Coy at our institute for our cadets and we got a very positive response from the NCC Officer, Palanpur.

All the activities related to the NCC are coordinated by Dr. K. M. Korot and Prof. Y. J. Chauhan.

9.7.4 Gymkhana Committee

The "Gymkhana" is an Indian term which refers to a social and sporting club. At GECPL, the Gymkhana Committee offers opportunities to the students to take out their talents in the activities of their interest by arranging various skill-based contests. The Gymkhana Committee has been operational with the following objectives:

- To provide infrastructure and resources supports to the students to conduct various cultural, social, sports and science & technology related activities which leads them towards all-round development.
- To arrange events/activities for providing opportunities to the students to enhance/develop managerial skills, leadership quality, decision making ability, team work, social awareness, etc.
- To allow students to participate in the events/activities to be conducted in our institute and at other institute, and provide them academic, administrative and financial supports.

Total activities conducted under the aegis of the Gymkhana Committee are divided in three categories:

(i) Science & Technology related activities,
(ii) Sports related activities
(iii) Cultural activities

The activities related to Gymkhana Committee are coordinated by Dr. K. M. Korot. He is assisted by Prof. N. A. Patel and Prof. D. A. Patel.

9.7.4.1 Science & Technology (S&T) Council

The institute organizes its annual technical and cultural event, named as PRAXES, since 2016. In this event, various technical and cultural activities are planned for the students. Initially all the events were celebrated at the institute level; however, since 2018, the participation to the technical events are offered to the students of any technical institute of the Gujarat State.

The details of the technical events performed during the year 2017-18 and 2018-19 are given in Table 9.7.7 and Table 9.7.8, respectively. The events were planned for the year 2019-20, but not executed due to COVID-19 pandemic. It was also not possible to conduct this event for the year 2020-21.

Table 9.7.7 Events conducted under S&T Council during year 2017-18

Sr. No.	Event	Faculty Co-ordinator	Student Volunteer	No. of

				Student Participated
1	Robotics	Prof. A. R. Chaudhary	Bhanusali Manoj Barot Bhavik Rami Dharmit Kamalkant Saini Mevada Tanvi	162
2	Project Exhibition	Prof. K. G. Prajapati	Tank Mit Parmar Himanshu Kushava Niraj	34
3	Robotics Workshop	Prof. P. N. Boka	Gosai Harsh, Patel Vishal, Parmar Hiren	324
4	Quiz Competition	Prof. M. G. Prajapati	Patel Utsav Parmar Hitesh Pathan Faisal	332
5	One-minute Game	Prof. H. U. Patel	Rahul Ray Bhupesh Agarwal	93
6	Lan Game	Prof. N. A. Mistry	Khadaliya Ronak Patel Neel	115
7	Treasure Hunt	Prof. M. D. Patel	Kadecha Harsh Kuchroo Sakshi Chaudhary Kiran	275
8	Innovative Engineering Idea Presentation	Prof. R. H. Chaudhary	Prajapati Siddharth Ashnani Khusbhu Dhavana Ketul	30

Table 9.7.8 Events conducted under S&T Council during year 2018-19

Sr. No.	Event	Faculty Co-ordinator	Student Volunteer	No. of Students Participated
1	Robotics	Prof. A. R. Chaudhary	Bhanusali Manoj, Barot Bhavik, Rami Dharmit, Kamalkant Saini, Mevada Tanvi	93
2	Project Exhibition	Prof. K. G. Prajapati	Tank Mit, Parmar Himanshu, Kushava Niraj	36
3	Robotics Workshop	Prof. P. N. Boka	Gosai Harsh, Patel Vishal, Parmar Hiren	510
4	Quiz Competition	Prof. M. G. Prajapati	Patel Utsav, Parmar Hitesh, Pathan Faisal	348
5	One-minute Game	Prof. H. U. Patel	Rahul Ray, Bhupesh Agarwal	57
6	Lan Game	Prof. N. A. Mistry	Khadaliya Ronak, Patel Neel	249

7	Treasure Hunt	Prof. M. D. Patel	Kadecha Harsh, Kuchroo Sakshi, Chaudhary Kiran	185
8	On the Spot	Prof. R. H. Chaudhary	Prajapati Siddharth, Ashnani Khusbhu, Dhavana Ketul	61

9.7.4.2 Sports Council

The institute celebrates "Sports Week" every year to promote the sports activity, and the students actively participate in various sports games. The details of the sports activities performed during the year 2017-18 and 2018-19 are given in Table 9.7.9 and Table 9.7.10, respectively. It was decided to celebrate "Sports Week" for the year 2019-20, but it was not executed due to COVID-19 pandemic. It was also not possible to organize Sports Week for the year 2020-21.

Table 9.7.9 Sports activity performed under Sports Council during year 2017-18

Sr. No.	Sports Activities	Date	Winning Department/Participant
1	Cricket	27/02/2018	ME 8th Sem.; Manoj (4th EE)-Man of the Series (MoS)
2	Kabaddi		MNE 8thSem.; Paresh Chaudhari (6th EE)-MoS
3	Volleyball		CE 8th Sem.; Manat Hardip (8th CE)-MoS
4	Kho-Kho		EE 8th Sem.
5	Tug of War		ME 8th Sem.
6	TT(Double)		ME 8thSem.; Cristian Manan and Ranjit Rana
7	Carrom		EE 8th Sem.; Sathvara Sagar
8	Chess		MNE 8th Sem.; Chauhan Akxay
9	TT (Single)		ME 8th Sem.; Ranjit Rana
10	Skipping Rope		ME 2nd Sem.; Prajapati Anil
11	Lemon Spoon		CE 6th Sem.; Bhavsar Dharmik
12	Slow cycling race		ME 6th Sem.; Panchal Chintan
13	Sack race		ME 6th Sem.; Modi Sandip

Table 9.7.10 Sports activity performed under Sports Council during year 2018-19

Sr. No.	Sports Activities	Date	Winning Department/Participant
1	Cricket	March 11-16, 2019	Civil 6th Sem.; Parshotam - Man of the Tournament
2	Cricket (Girls)		Electrical
3	Kabaddi		Electrical, Paresh Chaudhary (8th EE)-MoS
4	Volleyball		Mining
5	Kho-Kho		Electrical
6	Tug of War		Mechanical 6th Sem.
7	TT(Double)		Faisal Pathan and Bhavesh Rajput

8	Shot Put	March 16, 2019	Nirav Prajapati
9	Carrom		Gamit Joseph
10	Chess		Vaghela Jignesh
11	TT (Single)		Faisal Pathan
12	Skipping Rope	March 13-15, 2019	Luhar Nikhil
13	Lemon Spoon		Luhar Nikhil
14	Slow cycling race		Modi Krutang
15	Sack race		Anil Prajapati

9.7.4.3 Cultural Council

The cultural activities not only help students to identify themselves, but also assist students to develop themselves in the field of their interests. It provides opportunity to the students to develop/improve their organizational, presentation, leadership and interpersonal communication skills. The Cultural Council celebrates various days of national importance such as Republic Day, Independence Day and Teacher's Day. It also celebrates cultural festivals such as Holi and Navratri. Various cultural events performed during the annual technical and cultural festival, PRAXES, of the institute is also managed by Cultural Council.

The details of cultural events performed during the year 2017-18, 2018-19 and 2019-20 and 2020-21 are given in Table 9.7.11, Table 9.7.12, Table 9.7.13 and Table 9.7.14, respectively.

Table 9.7.11 Events conducted under Cultural Council during year 2017-18

Sr. No.	Date	Name of the Activity	Activity Coordinator	No. of participants	No. of volunteers
1	August 15, 2017	Celebration of Independence Day	Prof. K. V. Patel	160	20
2	September 05, 2017	Celebration of Teacher's Day	Prof. K. V. Patel	46	08
3	October 01, 2017	Celebration of Garba-ratri	Prof. K. V. Patel	490	40
4	January 26, 2018	Celebration of Republic Day	Prof. K. V. Patel	175	20
5	March 16, 2018	Cultural Night (PRAXES-2018)	Prof. K. V. Patel	74	24

Table 9.7.12 Events conducted under Cultural Council during year 2018-19

Sr. No.	Date	Name of the Activity	Activity Coordinator	No. of participants	No. of volunteers
1	August 15, 2018	Celebration of Independence Day	Dr. C. G. Prajapati	180	20
2	September 05, 2018	Celebration of Teacher's Day	Dr. C. G. Prajapati	45	08
3	October 01, 2018	Celebration of Garba-ratri	Dr. C. G. Prajapati	560	50
4	January 26, 2019	Celebration of Republic Day	Dr. C. G. Prajapati	210	20
5	March01,	Cultural Night	Prof. D. A. Patel	72	26

	2019	(PRAXES-2019)	Dr. F. J. Narsingani		

Table 9.7.13 Events conducted under Cultural Council during year 2019-20

Sr. No.	Date	Name of the Activity	Activity Coordinator	No. of participants	No. of volunteers
1	August 15, 2019	Celebration of Independence Day	Prof. D. A. Patel Dr. F. J. Narsingani	180	20
2	September 05, 2019	Celebration of Teacher's Day	Prof. D. A. Patel Dr. F. J. Narsingani	45	08
3	September 26, 2019	Celebration of Garba-ratri	Prof. D. A. Patel Dr. F. J. Narsingani	560	50
4	January 26, 2019	Celebration of Republic Day	Prof. D. A. Patel Dr. F. J. Narsingani	210	20
Achievement					
1	Our 10 students participated in 8th GTU Youth Festival (for Gandhinagar Zone), XITIJ-2019, and secured 1st, 2nd and 3rd rank in the "On the Spot Painting", "Skits" and "Clay Modeling" events, respectively. This zonal event, XITIJ-2019, was conducted and hosted by Smt. S. R. Patel Engineering College, Unjha, Gujarat during September 06-07, 2019.				
2	Our 8 students participated in GTU Inter Zonal Youth Festival, XITIJ-2019, and secured 2nd rank in the "Clay Modeling" and "On the Spot" events. This Inter Zonal event, XITIJ-2019, was conducted and hosted by Shree H. N. Shukla Institute of Pharmaceutical Education and Research, Rajkot, Gujarat during October 12-14, 2019.				

Table 9.7.14 Events conducted under Cultural Council during year 2020-21

Sr. No.	Date	Name of the Activity	Activity Coordinator	No. of participants
1	August 15, 2020	Celebration of Independence Day	Dr. C. G. Prajapati	22
2	September 05, 2020	Celebration of Teacher's Day (Online)	Prof. D. A. Patel and Prof. F. J. Narsingani	38
3	January 26, 2021	Celebration of Republic Day	Dr. C. G. Prajapati	20

CRITERION 10	Governance, Institutional Support and Financial Resources	120

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)

Vision:

"To be a leading technical institute facilitating transformation of human resources into socially responsible engineering professionals for sustainable development"

Mission:

1. To achieve academic excellence by developing state-of-the-art laboratories and academic infrastructure.
2. To create an ecosystem that promote value-based technical education, innovation and entrepreneurship for sustainable development.
3. To contribute to industry and society by providing technical and consultancy services.
4. To enhance technical competencies of human resources by providing need-based trainings and quality improvement programs.

10.1.2 Governing body, Administrative Setup, Functions of Various Bodies, Service Rules, Procedures, Recruitment and Promotional Policies (10)

Governing Body & Administrative Setup:

The Government Engineering College, Palanpur is established in May-2009 and wholly owned by the Government of Gujarat. It is administratively and financially governed by the Directorate/Commissionerate of Technical Education (CTE), Gandhinagar, Gujarat. The structure of the governing body and administrative setup of the institute are shown in Fig. 10.1.2.1 and Fig. 10.1.2.2, respectively. The details of Governing body and Administrative Setup are available on institute web portal.

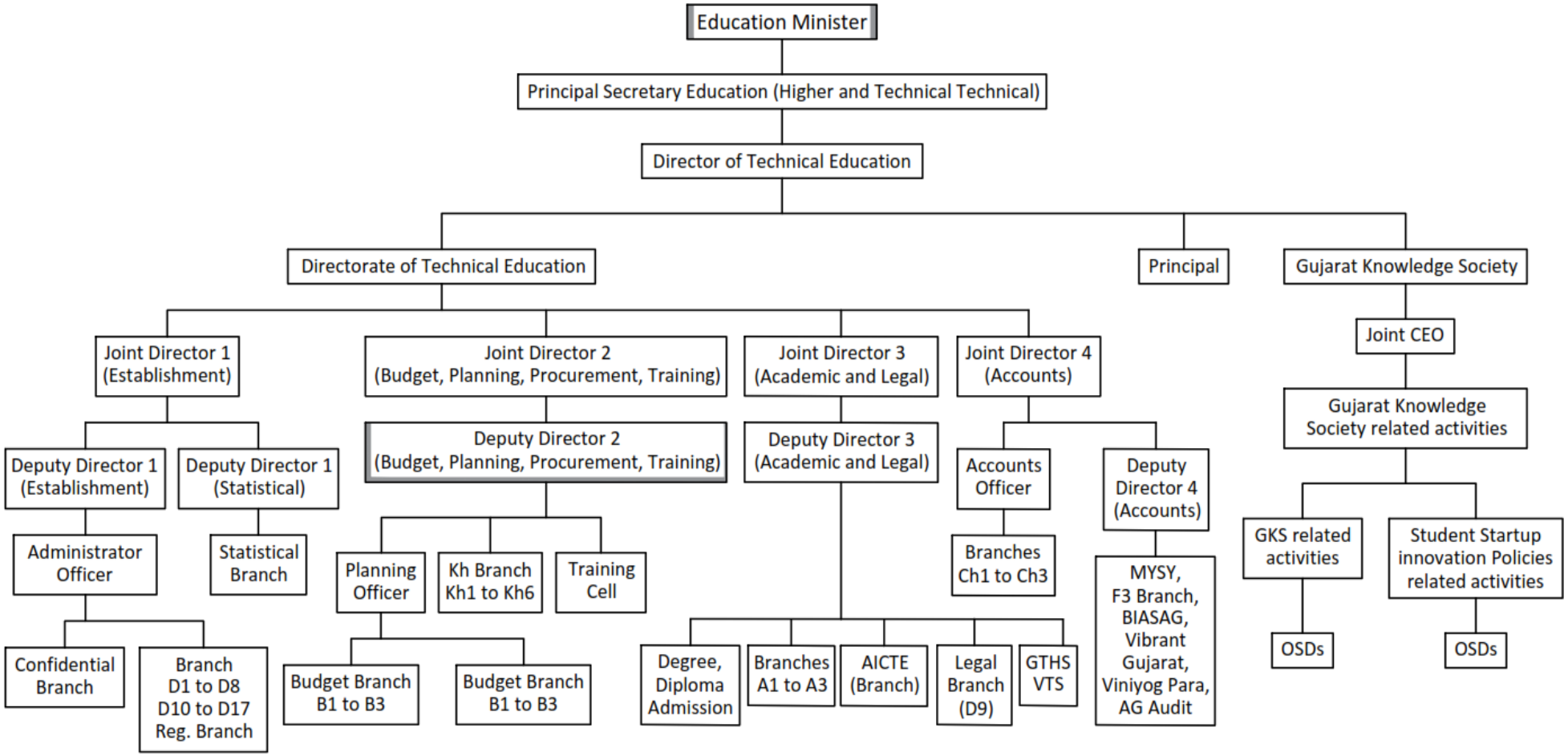

Fig. 10.1.2.1 Governing body of the Institute

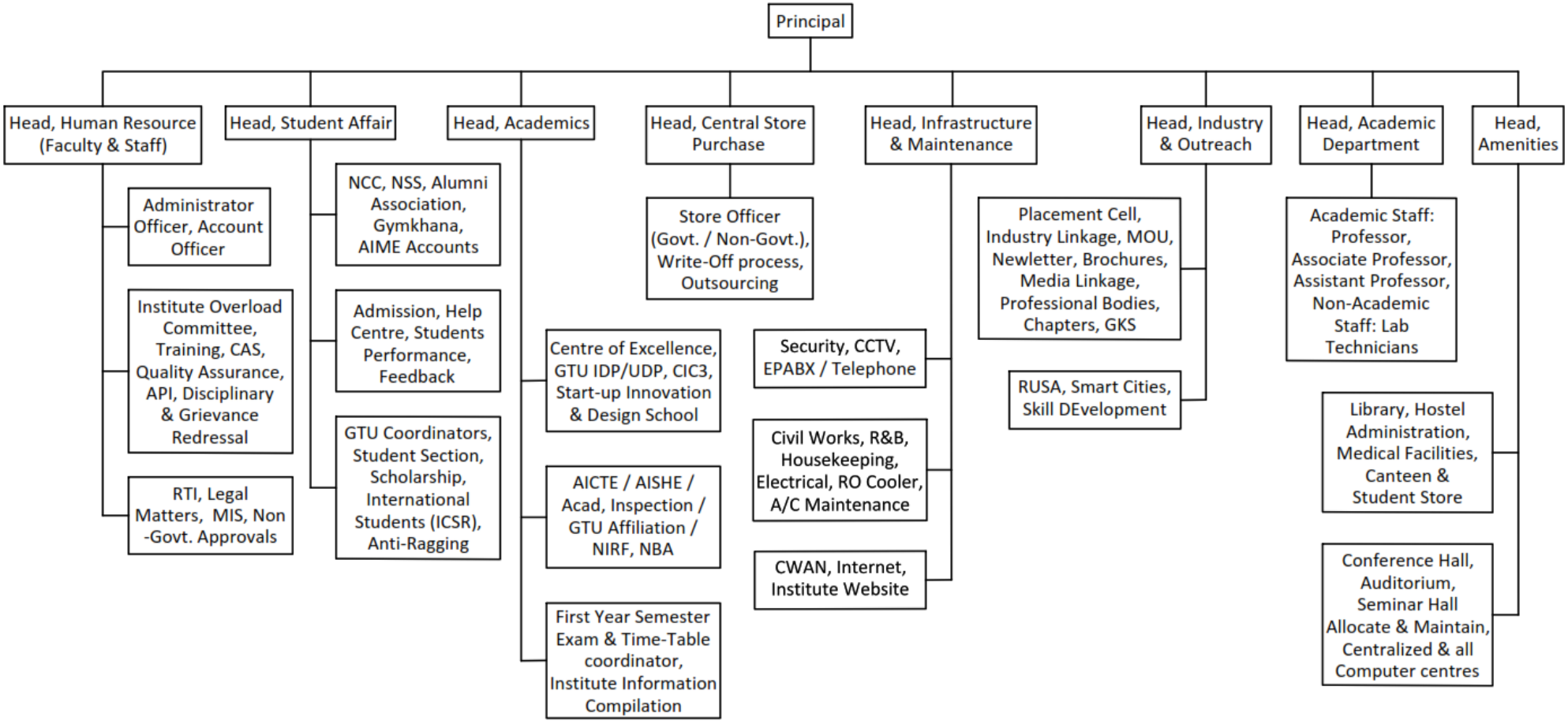

Fig. 10.1.2.2 Administrative Setup of the Institute

Functions of various bodies:

The faculty is mandated to play multiple roles in the institute. The "Technical Education Institution Manual (TEIM)" for Government Engineering Colleges has been prepared by the CTE, Government of Gujarat to provide detailed guidelines and indicators of the academic and administrative activities to be performed at the institute. Following the guidelines given in the TEIM, various committees have been formed for the smooth functioning and overall development of the institute, with vide Office Order Nos.: GECPL/Admin/2020-21/6 dated 01/01/2021 and GECPL/Admin/2021-22/853 dated 24/09/2021. The details of formulated committees are given in Table 10.1.2.1. These Office Orders are available on institute web portal.

Table 10.1.2.1 Details of various committees formed at the Institute

1	**Head, Human resource (Faculty & Staff)**	**Convener**	**Members**
1	Administrative officer	Dr. C. G. Prajapati	A. V. Vaghela,
2	Institute Overload committee and workload calculation	Dr. F. J. Narsingani	
3	RTI/ Legal Matters	H. N. Chaudhari	G. K. Chaudhari
4	Internal Complaint Committee (ICC)/Women Development Cell	R. H. Chaudhary	V. H. Khokhani
5	IQAC/ CAS/API/ Grievance Redressal	P. C. Vasani	D. A. Patel
6	Faculty/Staff Training / Research Process / Compilation	Dr. A. M. Patel	S. K. Dabhi
7	Accounts Officer	H. I. Chaudhary	J. G. Prajapati
2	**Head, Student Affairs:**	**Convener**	**Members**
1	Student Section, GTU Related Services & Examinations (GTU & Others)	V. R. Sharma	R. H. Chaudhary, S. K. Dabhi, M. K. Patel, S. L. Modi
2	Student Scholarships & Related Matters	K. G. Prajapati	V. H. Khokhani
3	Gymkhana	Dr. K. M. Korot	D. A. Patel, N. A. Patel
4	Alumni Association	Dr. A. M. Patel	H. U. Patel
5	NSS	Dr. C. G. Prajapati	V. K. Patel
6	NCC	Dr. K. M. Korot	Y. J. Chauhan
7	Anti-Ragging Committee	Dr. A. M. Patel	J. V. Modi
8	Student Welfare & Mentor International Student CSR	A. D. Patel	Y. J. Chauhan
9	Admission & Help Center	K. G. Prajapati	N. R. Kotiya
10	Student Performance/ Result Analysis / Feedback	A. K. Patel	J. H. Patel, V. H. Khokhani
3	**Head, Store & Purchase:**	**Convener**	**Members**
1	Central Store (Insti. Purchase /Vikaslaxi/New Items)/ST/ AMTS & Tendering For Outsourcing, Write-off	B. R. Patel	A. R. Chaudhari
4	**Head, Academics:**	**Convener**	**Members**
1	First Year Coordination / IIPC	A. D. Patel	K. G. Prajapati, S. G. Chauhan

			J. V. Modi
2	Institute Timetable Coordination	Dr. C. G. Prajapati	A.R. Chaudhari, J.H. Patel , R.K. Rathod
3	Event Report Preparation, CTE Meeting/ VC Info. Follow-up/ Compilation, minutes of Meeting	V. D. Patel	J. V. Modi, A. I. Roy
4	AICTE/ GTU Affiliation, AISHE/NIRF	H. V. Hirvaniya	J. H. Patel
5	NBA / Academic Calendar / Academic Inspection	Dr. J. A. Vadher Dr. A. M. Patel	A. D. Patel, N. R. Kotiya
6	SSIP Cell, GTU IDP/UDP, CIC3, Virtual Lab	N. A. Patel H. V. Hirvaniya	M. K. Patel, R. K. Rathod
5	**Head, Infrastructure & Maintenance:**	**Convener**	**Members**
1	Civil Maintenance and Liaison with PWD	Dr. G. M. Savaliya	N. R. Kotiya
2	Housekeeping/Landscaping	V. K. Patel	S. G. Chauhan
3	Electrical Maintenance and Liaison with R&B Electrical	B. R. Patel	
4	Mechanical Maintenance (RO/AC/FE)	A. R. Chaudhari	A. K. Patel
5	Computer/ Printer/Projector Network, Internet, CCTV, VC management and Maintenance issues	P. N. Boka	N. T. Raval M. J. Trivedi
6	Campus Security	H. N. Chaudhari	
7	KYC Portal, Website management and updating, MIS	A. K. Patel	M. J. Trivedi
6	**Head, Industry & Outreach:**	**Convener**	**Members**
1	Training and Placement Cell/Industry-Institute Interaction (I-I-I) Cell MOU/ CII/Finishing School	P. C. Vasani	N. A. Patel, Dr. G. M. Savaliya H.V. Hirvaniya, S. L. Modi
2	Institute Publishing Committee, Institute Brochure, E- Newsletter, Inst & Dept Brochure	A. B. Patel	M. G. Prajapati, M. N. Prajapati, A.I. Roy, N.T. Raval
3	AMIE/Professional bodies/Student Chapters & Consultancy	Y. J. Chauhan	
4	RUSA/ Skill Development/GKS/EBSB & GOI Scheme	Dr. J. A. Vadher	H. U. Patel, S. K. Dabhi
5	Language Lab /Scope	Dr. G. M. Savaliya	M. G. Prajapati
6	ED Cell/Design Lab	P. N. Boka	M. K. Patel
7	Media Coordinator/ Branding	D. A. Patel	R. K. Rathod
7	**Head, Amenities:**	**Convener**	**Members**
1	Library	M. G. Prajapati	M. N. Prajapati
2	Hostel Rector / Medical Facility	H. B. Patel	J. G. Prajapati
3	Hostel Warden (Boys)	Dr. K. M. Korot	H. N. Chaudhari
4	Hostel Warden (Girls)	Dr. F. J. Narsingani	
5	Canteen, Student Store and other student Amenities	H. U. Patel	M. N. Prajapati

The committees formulated under the head "Academics" aim: (i) to organize "Induction Program" for the newly admitted first year students, (ii) to prepare the institute timetable, (iii) to manage All India Council for Technical Education (AICTE)/Gujarat Technological University (GTU) affiliation and All India Survey on Higher Education (AISHE)/National Institutional Ranking Framework (NIRF) related matters, (iv) to coordinate accreditation and academic inspection related matters, (v) to promote and provide assistance to the students for the start-ups/innovations through "Student Start-up and Innovation Policy (SSIP)" initiative of the Government of Gujarat.

The role of "Infrastructure & Maintenance" committees is to develop and maintain the infrastructural facilities in the campus. Total seven committees have been formulated to oversee the civil, electrical, mechanical, computer peripherals, housekeeping/landscaping, campus security and web portal related maintenance/development issues/matters. These committees also make liaison with corresponding departments of the State Government for the betterment of the institute.

The main objective of the committees related to the "Student Affairs" is to provide guidelines and administrative supports to the students in various matters such as admission, institute transfer, scholarship, GTU/Exam, ragging, various State/Central Government schemes, grievance redressal, etc. For the all-round development of the students of the institute, these committees also arrange various activities/programs and provide administrative and financial supports.

The Central Store looks after the matters such as pre- and post-purchase activities, repair, write off, annual maintenance contracts, tendering, etc. in coordination with the Heads of the departments and Conveners of different portfolios. The purchase of equipment having cost above INR 20000/- is to be done in liaison with the Head Office. It follows guidelines/directions of the CTE, purchase manual of the department of Industries and Mines, Central Stores & Purchase Office (CSPO) manual, Gujarat Informatics Limited (GIL) and other prevalent policy of the Government of Gujarat.

Service Rules, Procedures, Recruitment and Promotional Policies

The institute follows the service rules and procedure as laid down by the Gazette of the Government of Gujarat, "Gujarat Civil Services Rules-2002". The "Gujarat Civil Services Rules-2002" is available on the institute web portal.

The recruitment and related procedures are carried out and managed by the CTE, Education Department of Gujarat State, Gujarat Public Service Commission (GPSC) and Gujarat Subordinate Service Selection Board (GSSSB) jointly.

The promotion of the faculty/staff members is carried out by the CTE, Education Department of Gujarat State and GPSC, following the guidelines/directions of the AICTE and prevailing norms of the Government of Gujarat.

10.1.3. Decentralization in working and grievance redressal mechanism (10)

Decentralization

Various committees have been formed for the smooth functioning and overall development of the institute, with vide Office Order Nos.: GECPL/Admin/2020-21/6 dated 01/01/2021 and GECPL/Admin/2021-22/853 dated 24/09/2021. The details of formulated committees are given in above Table 10.1.2.1.

Grievance Redressal Mechanism

Today, all workplaces in India are mandated by law to provide a safe and secure working environment free from sexual harassment for all women. In pursuance of the directions issued by the University Grants Commission (UGC), AICTE, Ministry of Human Resource Development (MHRD), Government of India, GTU and TEIM for GECs developed by CTE-Gujarat State, the institute has formed the "Women Development Cell (WDC)/Internal Complaint Committee (ICC)", Grievance Redressal Committee and Anti-ragging Committee.

The objectives of the WDC is to create hassle-free environment for the female students and faculty/staff members thereby enhancing their self-respect and self-confidence. The WDC conducts meeting with the female students and faculty/staff members twice in a semester to discuss the issues faced (if any) in the working atmosphere of the institute; however, the concerned issues raised at any moment are addressed instantly. The WDC also organizes the program to make the female students and faculty/staff members aware about the legal women rights. For the upliftment of the girl students, the WDC also organizes seminar on women entrepreneurship and various competitions.

The objective of the ICC is to prevent discrimination and sexual harassment of women at the workplace. The ICC ensures that victim or witnesses are not discriminated against while dealing with complaints of sexual harassment.

The activities related to the WDC and ICC are coordinated by Prof. R. H. Chaudhari and Prof. V. H. Khokhani.

The Grievance Redressal Committee (GRC) of the institute is operational with the objective to promote and maintain a conductive and harmonious educational environment for all the students and faculty/staff members. A "Complaint Box" is placed in the Administrative Building of the institute and it opens at the beginning of every month. Also, the students can submit their grievance online through institute web portal. The Convener of the Committee arranges meeting to discuss the issues and carefully handles it in coordination with the concerned faculty/staff/department/committee. The activities related to GRC for the faculty/staff and students are coordinated by Prof. P. C. Vasani and Prof. D. A. Patel, respectively.

The objective of the Anti-ragging Committee is to preserve a culture of ragging free environment in the campus of the institute. The Committee encourages students to report any ragging act witnessed or experienced by them to faculty member/Anti-ragging Committee or Squad/Student's GRC/any staff member to whom they feel comfortable. The Committee

ensures compliance with the provisions of the Anti-ragging regulations. The activities related to the Anti-ragging Committee are coordinated by Dr. A. M. Patel and Prof. J. V. Modi

Apart from these, the institute has formed a Committee for the RTI/Legal matters. The RTI/Legal related matters are coordinated by Prof. H. N. Chaudhari and Mr. G. K. Chaudhari. Prof. H. N. Chaudhari is also act as a Public Information Officer (PIO).

The details of all above-mentioned committees are also available on the institute web portal.

10.1.4. Delegation of financial powers (10)

As per the statutory guidelines of the "Financial Rules-1971" and "Financial Powers (Delegation) Rules-1998" of the State Government, the Principal is declared as head of the administrative and financial matters for the Government Engineering Colleges.

The whole government/non-government fund management procedure under the different schemes is conducted and maintained as per directives of the "Mumbai Contingency Expenditure Rules-1959", "Financial Powers (Delegation) Rules-1998", "Gujarat Treasury Rules-2000", "Government of Gujarat Gazette of Finance Department-2002", "State Purchase Policy-2000", "Amendment to Financial Powers-2017" and "Government e-Market (GeM) Purchase-2017". These all Government Resolutions are available on the institute web portal.

10.1.5 Transparency and availability of correct/unambiguous information in public domain (5)

The institute strongly believes maintaining transparency in all its operations and functions. The institute publishes and distributes brochure containing all the academic and administrative details to the newly admitted first year students. An Academic Calendar is published at the beginning of every semester which contains the schedule of academic and non-academic activities to be conducted at the institute. The institute brochure and academic calendar are also available on institute web portal.

The institute strictly follows the guidelines and directives of the "Right to Information Act-2005" and timely respond to all the matters comes under the RTI. The name and contact details of the Public Information Officer and Appellate Authority and other RTI related information are also available on institute web portal.

The concerned Government Resolutions/Gazette/Notification/Policy through which financial operation carried out are available on the web portal of the institute. The major purchase and procurement of any item/service is carried out through GeM portal and all such major bids/tenders are also published on the institute web portal time to time.

Apart from these, the institute regularly publishes all such administrative, financial, academic and non-academic information through notice board and institute web portal.

10.2 Budget Allocation, Utilization, and Public Accounting at Institute level (30)

The details of the total income, actual expenditure and expenditure per student at the institute level for CFY (2020-21), CFYm1 (2019-20), CFYm2 (2018-19) and CFYm3 (2017-18) are summarized in Table 10.2.1, Table 10.2.2, Table 10.2.3 and Table 10.2.4 respectively. The details of the expenditures for the above-mentioned duration are given in Table 10.2.5.

Table 10.2.1 Total Income for CFY 2020-21 (in INR)

Total Income: 70479080				**Actual expenditure:** 69040853			**Total No. of students:** 716
Fee	Govt.	Grant(s)	Other Sources (specify)	Recurring including Salaries	Non-recurring	Special Projects/Any other, specify	Expenditure per student
1534144	67693000	957895	294041	66844210	1876369	320274	96425.77

Table 10.2.2 Total Income for CFYm1 2019-20 (in INR)

Total Income: 76121642				**Actual expenditure:** 66294232			**Total No. of students:** 754
Fee	Govt.	Grant(s)	Other Sources (specify)	Recurring including Salaries	Non-recurring	Special Projects/Any other, specify	Expenditure per student
5320129	67927246	2331267	543000	52445232	12009028	1839972	87923.38

Table 10.2.3 Total Income for CFYm2 2018-19 (in INR)

Total Income:60594847				**Actual expenditure:** 60152739			**Total No. of students: 857**
Fee	Govt.	Grant(s)	Other Sources (specify)	Recurring including Salaries	Non-recurring	Special Projects/Any other, specify	Expenditure per student
5812179	53700923	1081745	0	49069833	9364224	1718682	70189.89

Table 10.2.4 Total Income for CFYm3 2017-18 (in INR)

Total Income: 57075562				**Actual expenditure:** 52564304			**Total No. of students: 918**
Fee	Govt.	Grant(s)	Other Sources (specify)	Recurring including Salaries	Non-recurring	Special Projects/Any other, specify	Expenditure per student
5513337	48980000	2485903	96322	43007802	7759962	1796540	57259.59

Table 10.2.5 Details of the Expenditure (in INR)

Items	Budgeted in CFY (2020-21)	Actual expenses in CFY (2020-21)	Budgeted in CFYm1 (2019-20)	Actual expenses in CFYm1 (2019-20)	Budgeted in CFYm2 (2018-19)	Actual Expenses in CFYm2 (2018-19)	Budgeted in CFYm3 (2017-18)	Actual Expenses in CFYm3 (2017-18)
Infrastructure Built-Up	0	0	8736000	244000	0	0	2300000	2005000
Library	43439	43439	630530	628718	330530	326879	300000	294590
Laboratory equipment	15500	15500	5403246	5374951	4328639	4319144	1274000	1241693
Laboratory consumables	12145	12145	54395	54395	22432	22432	7146	7146
Teaching and Non teaching staff	53882000	53843397	41313000	41285650	38524000	38523198	32903000	32813803
Maintenance and spares	470294	470294	700000	642394	0	285444	0	0
R&D	0	0	0	0	0	0	0	0
Training and Travel	116481	102381	496488	450609	541242	531409	708000	281595
Miscellaneous Expenses (Security, Housekeeping, Contractual servants, Visiting faculty)	13892143	12868976	7197116	6995365	6577966	6021200	6408605	5481681
Others (Electricity bill, Telephone bill, Office exp AMC for AC & Printer, Annual events)	2015784	1684721	11621397	10648680	10015124	10153563	13174811	10438796
Total	**70447786**	**69040853**	**76121641.95**	**66294232**	**60594847**	**60152739**	**57075561.52**	**52564304**

10.2.1 Adequacy of budget allocation (10)

Sr. No.	Year	Allocated Budget (in Rs.)	Expenditure (in Rs.)	Remarks
1	CFY (2020-21)	**70447786**	**69040853**	Adequate
2	CFYm1 (2019-20)	**76121641.95**	**66294232**	Adequate
3	CFYm2 (2018-19)	**60594847**	**60152739**	Adequate
4	CFYm3(2017-18)	**57075561.52**	**52564304**	Adequate

The budget allocated in the last 2 financial years was mainly utilized for up-gradation of Infrastructural facilities. Henceforth the budgets received will be directed towards the up-gradation of the laboratories & Library facilities.

10.2.2 Utilization of allocated funds (15)

Sr No.	Year	Allocated Budget (in Rs.)	Expenditure (in Rs.)	Utilization%
1	CFY (2020-21)	70447786	69040853	98%
2	CFYm1 (2019-20)	76121641.95	66294232	87%
3	CFYm2 (2018-19)	60594847	60152739	99%
4	CFYm3(2017-18)	57075561.52	52564304	92%

The total income of the institute includes two major heads: (i) Government Income (ii) Grants. The Government income includes budget received for salary, new equipment purchases, contingency, library, out-sourcing of services, travel expenditure, and the Grants include budget received for infrastructure development and maintenance, laboratory consumables purchase and other maintenance & spares. The other sources of income are availed for R&D and SSIP purpose.

The actual expenditure comprises of Recurring, Non-Recurring & Special Projects expenditures. The Recurring expenditures include salaries, monthly electricity bill/telephone bill, AMC amount.
The Non-recurring expenditures include the expenditure incurred behind infrastructure built-up/repair, library purchase, laboratory equipment & consumables purchase, spares parts purchase, training and travel and other miscellaneous expenditures such as stationary etc. The special Project expenditure is exclusively utilized for R&D and SSIP activities.

The allocated budget by the government to the institute for last four years were satisfactory and have been adequately utilized as per the details provided above.

10.2.3 Availability of the audited statements on the institute's website (5)

The Government Engineering College, Palanpur is fully owned and funded by the Government of Gujarat. The disbursal and utilization of various government grants is fully managed by the "Integrated Financial Management System (IFMS)" and "Treasury System" under the control of Department of Finance and Department of Accounts & Treasuries, respectively. Our accounts are audited by the Office of the Accountants General, Rajkot, Gujarat at regular interval of three years. The accounts are also audited by the departmental audit through Government of Gujarat. The financial statements and audit reports are available on the institute web portal.

10.3 Program Specific Budget Allocation, Utilization (30)

Table 10.3.1 Program budget allocation for CFY 2020-21 (in INR)

Total Budget: 16162558		**Actual Expenditure:** 16162558		**Total No. of student:** 210
Non-recurring	**Recurring**	**Non-recurring**	**Recurring**	**Expenditure per student**
187909	15974649	187909	15974649	76964.56

Table 10.3.2 Program budget allocation for CFYm1 2019-20 (in INR)

Total Budget:16407716		**Actual Expenditure:**16407716		**Total No. of student:** 221
Non-recurring	**Recurring**	**Non-recurring**	**Recurring**	**Expenditure per student**
4940103	11467613	4940103	11467613	74243.06

Table 10.3.3 Program budget allocation for CFYm2 2018-19 (in INR)

Total Budget:13012659		**Actual Expenditure:** 13012659		**Total No. of student:** 260
Non-recurring	**Recurring**	**Non-recurring**	**Recurring**	**Expenditure per student**
1963892	11048767	1963892	11048767	50048.69

Table 10.3.4 Program budget allocation for CFYm3 2017-18 (in INR)

Total Budget:11752088		**Actual Expenditure:** 11752088		**Total No. of student:** 267
Non-recurring	**Recurring**	**Non-recurring**	**Recurring**	**Expenditure per student**
894150	10857938	894150	10857938	44015.31

Table 10.3.5 Details of Expenditure (in INR)

Items	Budgeted in CFY (2020-21)	Actual Expenses in CFY (2020-21)	Budgeted in CFYm1 (2019-20)	Actual Expenses in CFYm1 (2019-20)	Budgeted in CFYm2 (2018-19)	Actual Expenses in CFYm2 (2018-19)	Budgeted in CFYm3 (2017-18)	Actual Expenses in CFYm3 (2017-18)
Laboratory equipment	3100	3100	260025	260025	766450	766450	821241	821241
Software	0	0	4459246	4459246	979623	979623	0	0
Laboratory consumable	2850	2850	0	0	18000	18000	800	800
Maintenance and spares	135278	135278	106704	106704	75169	75169	20620	20620
R &D	0	0	0	0	0	0	0	0
Training & Travel	12966	12966	57395	57395	78632	78632	33513	33513
Miscellaneous expenses	33715	33715	56733	56733	46018	46018	17976	17976
Total	**187909**	**187909**	**4940103**	**4940103**	**1963892**	**1963892**	**894150**	**894150**

10.3.1 Adequacy of budget allocation (10)

Sr. No.	Year	Allocated Budget (in Rs.)	Expenditure (in Rs.)	Remarks
1	CFY (2020-21)	**187909**	**187909**	Adequate
2	CFYm1 (2019-20)	**4940103**	**4940103**	Adequate
3	CFYm2 (2018-19)	**1963892**	**1963892**	Adequate
4	CFYm3(2017-18)	**894150**	**894150**	Adequate

The Government Engineering College, Palanpur is fully a Government Institute. There is no specific budget provision for a specific program. The budget allocation is carried out at institute level following the directions/instructions of Head of the Institution.

10.3.2 Utilization of allocated funds (20)

Sr No.	Year	Allocated Budget (in Rs.)	Expenditure (in Rs.)	Utilization%
1	CFY (2020-21)	**187909**	**187909**	100%
2	CFYm1 (2019-20)	**4940103**	**4940103**	100%
3	CFYm2 (2018-19)	**1963892**	**1963892**	100%
4	CFYm3 (2017-18)	**894150**	**894150**	100%

As per the requirement of laboratory up-gradation, software requirement, requirement of maintenance and spares, head of the institution has provided sufficient budget to the Mechanical Engineering program and is utilized adequately as per requirement.

10.4 Library and Internet (20)

The institute has complied deficiencies generated related to availability of the books (volumes) and journals, time to time. The records related to the availability/purchase and utilization of facility/equipment are well-documented and demonstrated. The features of the institute library are given in Table 10.4.1.

Table 10.4.1 Features of Institute Library

Total library area (in m^2)	813.63 m^2
Total Reading area (in m^2)	279.04 m^2
Accessibility to Students/faculty/staff	Any time between 10:30 am to 6:10 pm during working days
Number of library staff	02
Availability of exclusive server	Yes
Availability of exclusive space/room	Yes
Number of seats in reading space	80
Accessibility & No. of e-books:	Accessible through GTU portal (knimbus), total 1223.
No. of program covered	4
Availability of "Library Management Software (LMS)"	Yes, Soul 2.0
Computerized search, indexing	Yes
Number of users issuing books per day	25 (approx.)
Number of readers per day	45 (average)

The year vice record of expenditure incurred behind the library resources is given in Table 10.4.2.

Table 10.4.2 Expenditure on books, magazines/journals, and miscellaneous content

Year	Expenditure (in INR)			Misc. content	Comment
	Books	Magazines/ journals (for hardcopy subscription)	Magazines/ journals (for soft copy subscription)		
2016-17	142206	0	0	0	Under RUSA
2017-18	294590	0	0	0	-
2018-19	296349	30530	0	0	-
2019-20	598188	30530	0	0	-
2020-21	0	43439	0	0	-

10.4.1 Quality of learning resources (hard/soft) (10)

- **Relevance of available learning resources including e-resources**

Titles and Volumes:
Number of Titles available: **4528**
Number of Volumes available: **13618**

The details of the titles and volumes added, year vice, to the institute library are given in Table 10.4.3.

Table 10.4.3 Year vice added title and volumes to the Library

Year	Number of New titles added	Number of new Volumes added
2016-17	73	413
2017-18	170	724
2018-19	269	737
2019-20	464	1497
2020-21	0	0

Scholarly Journals:

Details	2020-2021	2019-20	2018-19	2017-18	2016-17
As a softcopy	0	0	0	0	0
As a hardcopy	37	24	24	0	0

- **Accessibility:**

All learning resources available in the library are fully accessible to all the students between 10:30 am to 06:10 pm during working days.

- **Support to students for self-learning:**

At GEC Palanpur, we conduct many activities and provide many resources to our students which enables them to acquire additional knowledge through self-learning. All such activities are mentioned in detail at Criteria 9 in Sub Point **"9.4. Self-Learning"**.

10.4.2 Internet (10)

Name of the internet provider	National Knowledge Network (NKN) through NIC and RAILTEL
Available band width	100 Mbps
Wi-Fi availability	30 Access Points (23 CWAN + 7 NAMO Wi-Fi) 20 Mbps with 4 routers at Library Building 20 Mbps with 3 Amenities Building
Internet access in labs, classrooms, library and offices of all departments	550 Internet Nodes spread across whole campus, including faculty, staff cabins, laboratories and library
Security arrangements	Access to Internet is controlled through user authentication using firewall device Cyber roam Client

Government of Gujarat
સરકારી ઇજનેરી કોલેજ પાલનપુર
જગાણા, પાલનપુર-અમદાવાદ હાઇવે, પાલનપુર-૩૮૫૦૦૧, ગુજરાત, ભારત
GOVERNMENT ENGINEERING COLLEGE PALANPUR
JAGANA, PALANPUR-AHMEDBAD HIGHWAY, PALANPUR – 385001, GUJARAT, INDIA
ESTD : 2009
अभियान्त्रिकीज्ञानम् जनकल्याणम्
ફોન નં. (૦૨૭૪૨) ૨૨૦૦૦૫, ૨૨૦૦૦૬ Phone No. (02742) 220005, 220006
Website: www.gecpalanpur.ac.in, www.gecpl.cteguj.in Email: gec-palanpur-dte@gujarat.gov.in

No: GECPL/NBA-Mech/ 25 **Date:11/01/2022**

Declaration

I undertake that, the institution is well aware about the provisions in the NBA's accreditation manual concerned for this application, rules, regulations, notifications and NBA expert visit guidelines inforce 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 observe during pre-visit, visit, post visit and subsequent to grant of accreditation.

GOVERNMENT ENGINEERING COLLEGE * PALANPUR *

11/1/22

(Dr. K. B. Judal)
Principal
Government Engineering College
Palanpur-385001 (N. G.)

Government Engineering College, Palanpur

अभियान्त्रिकीज्ञानम् जनकल्याणम्

Annexure -1

(A) Program Outcomes

PO1 Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2 Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3 Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4 Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5 Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6 The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7 Environment and Sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8 Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9 Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10 Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11 Project Management 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.

PO12 Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

(B) Program Specific Outcomes (PSO)

Mechanical Engineering Department

PSO-1

To apply knowledge and skill of mechanical engineering to solve real life problems to meet the need of society.

PSO-2

To able to pursue his career as professional mechanical engineer.