

CRITERION I: CURRICULAR ASPECTS

1.1 Curriculum Design and Development

VISION

SARDAR PATEL COLLEGE OF ENGINEERING (SPCE) ASPIRES TO BE AN INSTITUTION OF NATIONAL REPUTE THAT WILL CREATE PROFESSIONALS WITH COMPETENCE AND MOTIVATE RESEARCH FOR THE PROGRESS OF THE NATION.

MISSION

- ✓ To impart quality education through time relevant curriculum in academic programs.
- ✓ To enhance career opportunities for students through industry institute interaction & value added courses.
- ✓ To promote excellence by encouraging innovative ideas and lateral thinking.
- ✓ To inculcate sense of discipline and responsibility towards society.

The Vision & Mission of the college is formulated by involving various stakeholders from industries, academicians from reputed colleges, alumni, employers etc. in order to cater to the requirements of changing technological developments.

The adoption of creative learning methods by keeping Blooms taxonomy in mind and giving experience of “learning by doing” from the second year onwards helps students to understand the concepts in both breadth and depth.

The curriculum is designed to offer sufficient flexibility allowing the students to choose the Value added courses offered by the department at lower semesters and variety of elective courses offered at the higher semesters so as to remain abreast with the latest technological trends. The students are exposed to various emerging & research areas by organizing Continuous Education Programs (CEP) & through strong industry institute interaction. To cultivate research culture in the institute Senior Research Advisors (SRA) from reputed IITs have been appointed. The institute is also equipped with various research tools in place.

Organizing various co-curricular and extra- curricular activities centrally by the college or through various student clubs help the students to develop leadership qualities, team work spirit, professional and soft skills which help them to succeed in their life. Values are inculcated in the students through the reflection of the virtues of the all concerned stake holders and the culture of the college. The values related with good citizenship and civic sense is addressed through courses on Environment Studies, Economics, Industrial Management and Business Ethics etc. Thus the academic programs of the college enable the students to acquire existing knowledge, enhance their analytical and design abilities to provide engineering solutions to real world problems through research and help them to become leaders in their respective field.

1.1.2 Describe the mechanism used in the design and development of the curriculum? Give details on the process. (Need Assessment, Feedback, etc)

The mechanism used in the design and development of curriculum is as depicted below.

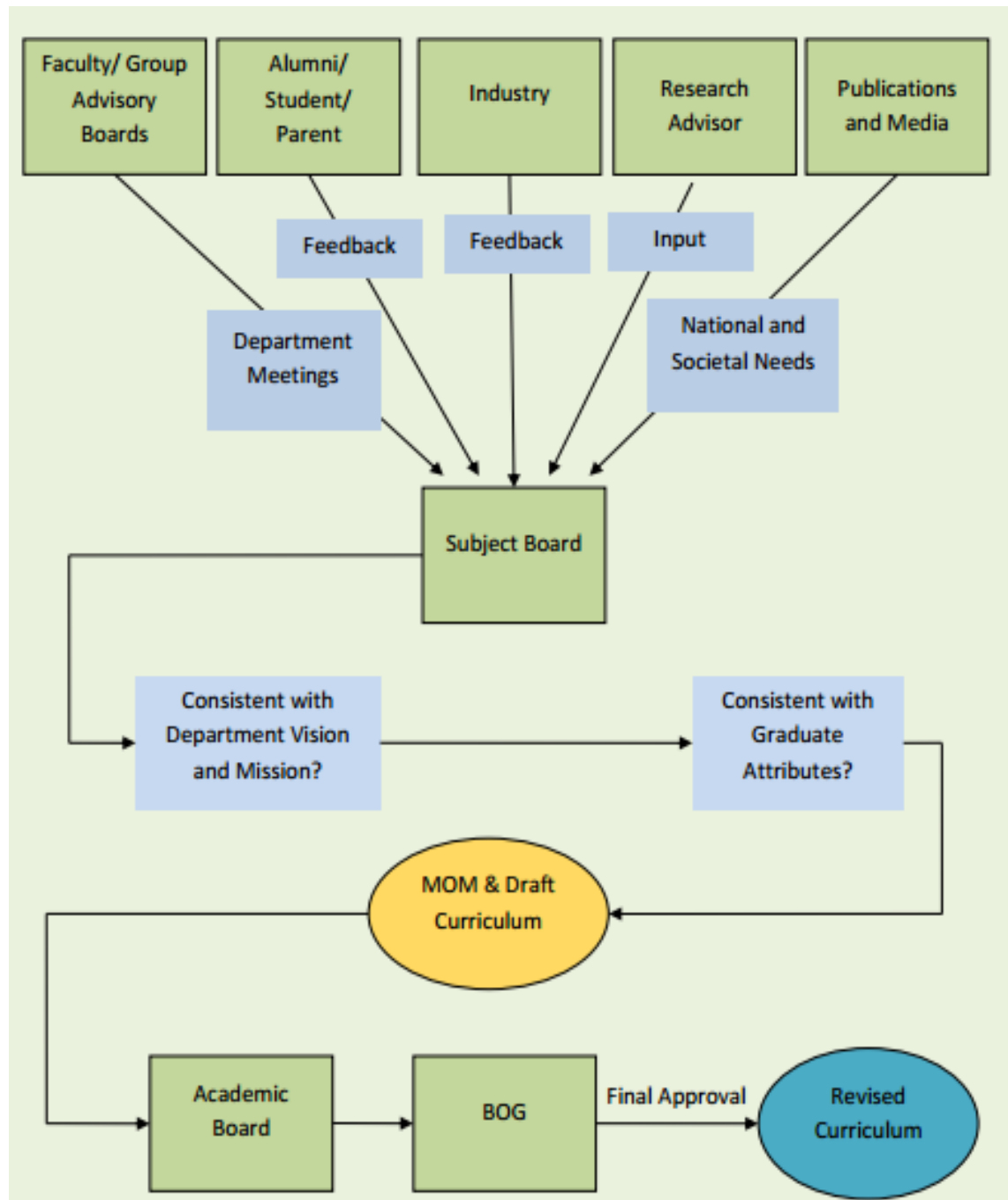


Fig. 1.1 : Design and Development of Curriculum Mechanism

The course instructor of each department along with the course development committee & Department Advisory Board (DAB) designs a curriculum with lot of brain storming and deliberations. Critical planning, curriculum development workshops, analysis of feedback reports received by the department from various stake-holders (especially from industries and alumni), discussions on graduate attributes etc. take place before a new course is framed and implemented. Each department has formed a Subject Board (SB) and Department Advisory Boards, the constitution of which is as follows:

Table 1.1 Coursewise Committee

Sr.no	Designation /Portfolio
1	Course Instructor
2	Subject Expert (External)
3	Industry Expert
4	Alumni

Table 1.2: Department Subject Board (DSB)

Sr.no	Designation	Designation with affiliation
1	Chairman	Head of the Department (01)
2	Member Secretary	Associate Professor nominated by HoD (01)
3	Member	Professional Experts (02)
4	Member	University Representative (01)
5	Member	Subject Experts from other reputed institute like IIT (03)
6	Member	Subject Expert(Alumni), Invitee (01)
7	Member	Current Student -UG (01)
8	Member	Current Student -PG (01)
9	Member	Senior Professors (02)

Initially, the first version of curriculum is drafted after number of brainstorming sessions among the faculty members of the department by taking into consideration the guidelines of AICTE, Program Specific Criteria of international professional bodies, Graduate Attributes as defined through Washington Accord and institute policies regarding total number of credits, flexibility in terms of interdisciplinary courses etc. The curriculum thus framed by the department committee is tabled and discussed in DAB meeting & subsequently in Subject Board (SB) for approval. Any suggestions by SB/DAB members are taken into consideration. The modified curriculum is then presented in Academic Board (AB) for the approval. Finally it is presented to the members of Board of Governors (BOG), in the meetings generally scheduled two per semester. After approval by BOG, the curriculum is published on the institute website;

else it goes back to Subject Board for further modification. The constitution of AB is as follows:

Table 1.3 : Academic Board (AB)

Sr.no	Designation	Designation with Affiliation	No.
1	Chairman	Principal/ His Nominee	1
2	Member Secretary	Dean Academics	1
3	Member	Head of the Departments	3
4	Member	Professional Experts from Industry	3
5	Member	Professional Expert from Academics	3
6	Member	Nominee of DTE	1
7	Member	Invitees by Chairman	1 to 4

1.1.3 How does the College involve industry, research bodies, and civil society in the curriculum design and development process? How did the College benefit through the involvement of the stakeholders?

As mentioned above, Subject Board (SB)/DAB of each department has members from industry, other academic and/or research Institute to offer their suggestions for starting new courses, or modifying existing courses as well as for introducing value added courses, innovation in teaching-learning methodologies & assessment methods. The formal and informal discussions with employers and civic bodies help us to involve important stake holders in the curriculum design and development process

The interaction with research institutes like TIFR, BARC, reputed academic institutes like IITB, Mumbai, IISc, Bangalore, IITR, state level autonomous institutes viz. CoEP, Pune, VJTI, Mumbai, SGGS, Nanded etc. and industries such as L&T, AKER Solutions, Godrej, Tata Motors, Mahindra & Mahindra, Badwe Autocomponents, Christiani & Sharpline, Reliance Energy Limited etc. helps in developing vibrant curricula and in obtaining sponsored projects and internship for students and collaborative research in emerging areas of engineering. Since these stakeholders are frequently informed about the outcome based academic practices followed in the institute, they are assured of the abilities of the graduates of this college leading to a good image of the college in the society and good placement of the students.

All points mentioned above have benefited the college in following aspects

- ✓ Design and development of better curriculum over the years.
- ✓ Conscious efforts for attainment of Course outcomes, Program Outcomes (POs) Program & Educational Objectives (PEOs)
- ✓ Increasing number of industry projects, industrial visits, industrial trainings and internships.

1.1.4 How are the following aspects ensured through curriculum design and development?

- * Employability**
- * Innovation**
- * Research**

Employability:

- ✓ Curriculum and syllabi are designed with the contribution from industry to meet their general and specific requirements.
- ✓ Most of the courses of UG and PG program enable the students to enhance their technical and logical skills.
- ✓ Theory courses are augmented by corresponding practical courses which develop in students the skills related with design & development.
- ✓ Mini-projects are a part of curriculum for both the semesters from the second year onwards of the program. Main project is carried out by the UG students in the eighth semester of the program either in the department or in the industry.
- ✓ The presentation of mini-projects and projects through seminars for UG program and exclusive seminar course for two semesters of PG program helps to develop communication and professional skills and team skills in the students.
- ✓ Need based training programs are provided to the students in the form of workshops and Experts from industry, professors from reputed foreign or national institutes or in-house faculty.
- ✓ Special Soft-Skill development programs, Aptitude and Attitude development programs delivered by industry professionals are arranged on regular basis.
- ✓ Industrial visits are arranged by various departments to give exposure to current trends and requirements of industries.
- ✓ Efforts are taken to introduce open electives so that students acquire knowledge from cross domain platforms and apply skills to develop integrated systems.

Innovation:

- ✓ To enhance the innovative skills the institute offers various opportunities to the students by allowing them to participate in National level events like SAE/BAJA ,SUPRA, ROBOCON Competitions, GO CARTING Championship. As a result, Institute received
 - ❖ Best Technology Innovation award in SAE/BAJA competition
 - ❖ Best Go Green award in SUPRA Competition and
 - ❖ Third runners up in ROBOCON Competition.
- ✓ Students also participate in Technical Events like SPECTRA organized at institute level which offers them an opportunity to exhibit & demonstrate their

innovative & technical skills as well as they participate in ISHRAE competition organized at departmental level.

- ✓ Each department student association organizes competitions and weekly club services on various technical skills throughout the year. CESA - Civil Engineering department students association, MESA- Mechanical Engineering department students association, EESA- Electrical Engineering department students association organize the technical events in their areas to motivate the students to explore and innovate.
- ✓ Apart from various students associations, there are other clubs with cross domain department memberships are in existence such as SPEAKERS Club, History Club & ROBOCON Club- There programs are innovative, triggering social awareness and responsibility towards society.
- ✓ PG and UG students are encouraged to present the papers on their dissertation and project work in the conferences held anywhere in India.
- ✓ The state of the art Laboratories are getting established in the institutes in the various areas in the departments.
- ✓ The college organizes various specialized courses for the students with help of industries to help them develop professional skills in product development. For example, Basic & Advanced Course in DELMIA,CATIA,SIMULIA,PLM, DELCAM, MATLAB, PLC are regularly organized to develop professionals skills of the student
- ✓ Working on MOU's with other institutes. The students of Mechanical Engg. Department & Electrical Engg. Dept. are pursuing innovative projects as per MOU signed with ICT.
- ✓ Students are given opportunity to work in fast emerging areas. For example, Mechanical Engg. Students have prepared 3D printer

Research:

College has established linkage with research organization (TIFR,BARC), academic institutes of national repute (IITB, IISc, IITR) and industries (Larsen & Toubro, AKER Solutions, Reliance Energy ltd, Godrej, Christiani & Sharpline, Badwe Auto components) in order to pursue collaborative research.

- ✓ The courses on mini-projects and projects make the students to review the literature, define their problem and prepare the synopsis. This helps to impart self learning attitude in them.
- ✓ Financial support is given to the students and faculty members who present papers

- in national or international conferences or journals.
- ✓ Faculties are deputed under QIP to pursue Ph. D. at I.I.T.s/ I.I.Sc.
- ✓ The research centre under QIP is already established with Civil department and the establishment of the same is in process with other departments. SPCE itself is a recognized Research Centre under Mumbai University for Mechanical & Civil Engineering departments.
- ✓ Research funding and projects from DST, AICTE, DRDO, etc. are undertaken to pursue research in areas of national thrust.
- ✓ Expert Lectures from IITs are arranged on how to conduct research
- ✓ International faculty are called to deliver the talks on their areas of research
- ✓ Senior Research advisors are appointed to cultivate research atmosphere in the institute
- ✓ Research tools like SPSS & Minitab are in place

1.1.5 How does College ensure that the curriculum developed addresses the needs of the society and have relevance to the regional / national developmental needs?

The curriculum of **Mechanical Engineering department** deals with health safety & environment norms for industrial applications. It also deals with how to produce eco friendly products through Green Manufacturing. Students are doing interdisciplinary projects in collaboration with ICT on self sustained Pyrolysis for plastic waste management. The unit is small in size and can be installed in residential colonies for efficient & environment friendly disposal of plastic waste. The curriculum of **Civil Engineering Department** takes into account the problems related with environment, water quality, air quality, pollution and includes topic on green ambience. The curriculum of **Electrical Engineering Department** deals with utilization of electrical energy efficiently & environmental impact of electric installations. Electrical engineering students are also doing interdisciplinary project on bio sensors for detection of pesticides in water. These sensors are targeted for its use in villages to test potable water. Civil Engineering students are doing interdisciplinary projects with Mechanical Engineering students on Layering technology.

1.1.6 To what extent does the College use the guidelines of the regulatory bodies for developing or restructuring the curricula? Has the College been instrumental in leading any curricular reform which has created a national impact?

College follows the guidelines prescribed by AICTE.

- ✓ The comparison of current curriculum of all UG programs with that recommended by AICTE is as depicted in the Table 1.3. It is evident from the table that the percentage contribution of various components of SPCE curriculum is within the range prescribed by AICTE,
- ✓ While finalizing the curriculum, it is confirmed that all the aspects as per the criteria recommended by Professional bodies (e.g. EEE for Electrical, ASME for Mech. Engg., ASCE for Civil Engineering) are taken into consideration

Table 1.3 : Curriculum Components in Percentage (AICTE & SPCE)

Category	Course in Area	Credits		Category Component		
		AICTE Suggested	SPCE Proposed	AICTE Range %		SPCE %
				MIN	MAX	
HS	Humanities & Social Sciences, Management	14	16	5	10	7.31
BS	Basic Sciences including Mathematics	30	28	15	20	12.79
ES	Engineering Sciences including Materials , Workshop, Drawing, Basics of Electrical/ Mechanical/ Civil Engg ,etc.	30	44	15	20	20.09
PC	Professional Core	50	111	30	40	50.68
PE	Professional Electives	20	10	10	15	4.57
OE	Open Electives	12	0	5	10	0
PR	Project, Internship, Seminar	20	10	20	15	4.57
MC	Mandatory Courses like NSS, Industrial Visits, etc		0			0
	TOTAL	176	219	---	---	100

- ✓ The Basic and Engineering Sciences including Mathematics and Basic Computing (generally included in the first year of Engineering and is common to all UG programs) is to a level of 25-30% in terms of number of credits. The Professional Core and Professional Electives courses are to a level of 45-50%. Enough emphasis is given to Design related courses in all programs.
- ✓ The percentage wise contribution of courses on Project, Humanities and open electives is to a level of 10%, 5% and 8-10% respectively.
- ✓ As per the guidelines of UGC and university, the mandatory courses on Environmental Science and Engineering Economics and Industrial Management are

included in the curriculum.

- ✓ The curriculum also includes non credit courses such as Programmable Logic Controllers (PLC), Internet of Things (IOT), Composite materials etc.

The college has been instrumental in leading curricular reform in terms of :

- Offering Value added courses from the third year.
- Allotting the full semester for Mtech project for dissertation in industry or Research College.
- Research Methodology is taught at B.Tech, Mtech & PhD.
- Offering more electives in UG and three electives in PG program.
- Adopting relative grading scheme.

1.2.1 Give details on the following provisions with reference to academic Flexibility

a. Core/Elective Options:

Undergraduate Programs:

Professional Core Courses (UG):

Professional Core and Professional elective course offered by each department are as per AICTE guidelines. Core courses include all the basic and higher level courses of corresponding program besides those required as per the Program Specific Criteria of corresponding international professional body. This establishes the equivalence of the graduate of this institute with any other related engineering graduate anywhere in the world.

Value Added Courses (VAC)/ Bridge Courses (BC)

Each department offers two to three value added non credit courses based on latest technology & trends and also as per the needs & requirements of industry. Students can choose any one of this courses. Some of the courses are supported by industries which help the students for their placement as well in that area. These courses can be offered and can be altered by the Academic Board from time to time as per the trends in industries.

Elective courses at UG

Many no. of electives are offered at VIIth & VIIIth semester. These electives are offered as per the needs of the industry and also as a part of new & emerging technologies. This enables them to acquire in-depth knowledge of the specialized area of the concerned engineering discipline of their choice. These courses can be offered and can be altered by the Academic Board from time to time as per the trends in industries.

Choice for Project (UG)

Currently students are doing the project inhouse or in collaboration with some industry. It is planned for the students to give option in the eighth semester to carry out their final year project in the industry or research institute or any other reputed academic college *OR* in the department for the full term. The former option gives exposure to the students of industrial/research environment and helps them broaden their perceptions and views.

b. Industrial Trainings :

Depending on the skills needed for employability and successful professional career, department regularly organizes industrial training programs in collaboration with various industries. These industrial trainings help the students to acquire technical skills, personality development and knowledge of latest softwares available in the branch. A list of such industrial trainings include: Trainings on

CAD-CAM, PLM, CATIA, DELMIA, SIMULIA, SPSS, MATLAB, PRIMAVERA,CFD, PROJECT MANAGEMENT by Tata Technology, CADD CENTRE. Basic & advanced trainings are given on these softwares. Hands on Training on PLC and SCADA are provided by Christiani & Sharpline on regular basis. Besides this, PG students are given an opportunity to attend the courses on various areas through IIT's National level Outreach Program. Such courses on Research Methodology, Control Systems, Finite Element Analysis, Digital manufacturing etc. have been attended by them.

Dissertation at (PG):

PG students carry out the dissertation work for the entire second year of their M. Tech. program. The student can opt for carrying out the dissertation work in Research Organization such as DRDO, TIFR, IITB or industry such as GODREJ, LARSEN & TOUBRO, BADWE AUTO COMPONENTS, RELIANCE ENERGY, AKER SOLUTIONS, D-ESPAT, CHRISTIANI & SHARPLINE, TOYO ENGINEERING etc. Many students work at the institute for carrying out their dissertation. It is expected that students publish at least one paper in journal or conference at national/international level.

Credit transfer and accumulation facility

Currently, facility of credit transfer and association with other autonomous colleges of the state (COEP, WCE Sangli, VJTI Mumbai, SGGGS Nanded) have been defined. This is proposed to be implemented from academic year 2016-17. The students who had failed in the course or obtained D or C grade in the course can re-register or appear for make-up examination (generally held within one month after declaration of 2nd semester End Semester examination (ESE) results) for grade improvement.

Lateral and vertical mobility within and across programmes and courses

Lateral entry to Diploma students is allowed at the second year of the UG program while vertical entry in other program through branch transfer is allowed at the second year of the UG program.

1.2.2 Have any courses been developed specially targeting international students? If so, how successful have they been? If 'no', explain the impediments.

"No", at present no such courses have been developed specially targeting international students. College proposes to do so after establishing the credibility (ranking within 20) at National level and after getting Deemed University status.

1.2.3 Does the College offer dual degree and twinning programmes? If yes, give details.

No, college does not offer dual degree and twinning programmes since as per guidelines of Parent University. College proposes to do so after getting the Deemed University status.

1.2.4 Does the College offer self-financing programmes? If yes, list them and indicate if policies regarding admission, fee structure, teacher qualification and salary are at par with the aided programmes?

All PG programs are self financing. But admission is state level centralized.

1.2.5 Has the College adopted the Choice Based Credit System (CBCS)? If yes, how many programmes are covered under the system?

College has not yet adopted Choice Based credit System. The minimum number of credits to be earned for completing any year of the program and the entire program is fixed. CBCS is planned to be implemented from 2017-18.

1.2.6 What percentage of programmes offered by the College follows semester system?:

All the UG & PG programs offered by the college follow the semester system. The college is planning to have summer term and credits earned will be considered in the CPI of the students.

1.2.7 What is the policy of College to promote inter-disciplinary programmes? Name the programmes and what is the outcome?

Inter-disciplinary programs are identified based on the thrust areas declared by the State and Central government, employment potential and societal requirements.

Mechatronics is one of such program identified by the college which departments have already promoted at UG level. The outcome of this program will be providing the knowledgeable work force in combined areas of Mechanical Engineering and Electronics to cater the requirements of industries implementing mechanical machine based automatic manufacturing. Going ahead, Internet of Things (IOT), Rapid Prototyping, Financial Management, Industrial Safety, Programmable Logic Controllers (PLC) are the other interdisciplinary areas which the college is looking to offer as interdisciplinary programs.

1.3 Curriculum Enrichment

1.3.1 How often is the curriculum of the College reviewed for making it socially relevant and/or job oriented / knowledge intensive and meeting the emerging needs of students and other stakeholders?

Curriculum of UG and PG programmes are reviewed and revised periodically based on the needs of the stakeholders. Minor changes in courses, if required, are implemented per semester depending upon the gap analysis of the targeted and attained course outcomes. Major modifications/revisions (e.g. structure of the syllabus) are generally carried out once in four years. In few cases, such modifications would be carried out even during three years period to satisfy the emerging needs of the students and other stakeholders through additional elective courses after completing the formalities of Subject Board (SB) approval followed by Academic Board (AB) approval. Since autonomy in 2010, there have been two major revamps in curriculum. The current curricula emphasize outcome based philosophy in line with NBA and ABET requirement. Recently the college has formed course committee for each PG course.

1.3.2 How many new programmes have been introduced at UG and PG level during the last four years? Mention details.

Only one new PG program viz. “PG in Power Electronics & Power Systems (PEPS)” in Electrical Engineering has been introduced since 2015-16. Two new PG programs, one in Civil & Mechanical Engineering are already approved in BOG.

1.3.3 What are the strategies adopted for revision of the existing programmes? What percentage of courses underwent a major syllabus revision?

The strategies adopted for revision of the existing programme are as follows:

- ✓ Analysis of feedback from students and subject experts
- ✓ Reference to syllabi of nationally reputed academic colleges such as IITs.
- ✓ Reference to guidelines on model Curriculum by AICTE
- ✓ Outcome Based Education as per requirement of NBA and ABET
- ✓ Formal and informal suggestions by experts from industries and Academic Board

members.

- ✓ Review of global scenario through interaction with International experts.
- ✓ Emphasis on activity based learning

About 50% courses underwent a major syllabus revision in last three years. 100% courses underwent a revision for properly defining the course objectives, course outcome and their mappings to program outcomes in view of national thrust on Outcome Based Education philosophy. Evaluation of attainment level is made mandatory for each course.

1.3.4 What are the value-added courses offered by the College and how does the College ensure that all students have access to them?

Following is the list of value added courses offered by the college

- ✓ PLC
- ✓ Composite of Materials
- ✓ Vehicle dynamics
- ✓ Internet of things

The value added courses are available in the Academic book which is available on website as well as on MOODLE. These are also published in the Annual Report of the department.

1.4 Feedback System

1.4.1 Does the College have a formal mechanism to obtain feedback from students regarding the curriculum and how is it made use of?

Yes, the college has a mechanism to obtain online feedback from students regarding curriculum delivery. On line end-semester feedback is taken using “Google drive forms” for all the courses in that semester. The access to the feedback analysis is provided to concerned faculty member and HoD. In case of poor feedback for a course or faculty, a Counseling Committee under the Chairmanship of Head of the department holds a discussion in person with the concerned faculty to pinpoint the causes and suggests a corrective action.

A course faculty collects the online feedback from the students on attainment of course outcomes of the course delivered by him/her. A feedback analysis for this Course Exit Report is done by the faculty himself. A rigorous analysis on that directs for the strengths and weaknesses of that course so that modifications in content or delivery or assessment can be carried out in the subsequent semesters. At the end of the semester the faculty submits the necessary corrections to be done next year in term of delivery method, suggestions if any required in syllabus.

A separate Graduate exit feedback is collected from the graduating students for their satisfaction on the attainment of program outcomes, the contents of curriculum and in general infrastructure of the department and institute. Their genuine suggestions are taken into consideration while revising the contents of the curriculum; Feedbacks from alumni and employer are also collected to compute the attainment of Program Educational Objectives. The informal discussions with them also are taken into consideration to revise the curriculum, lab facilities, central facilities etc. A thrust is given to identify the areas where graduates failed to perform as per expectations of the employers.

1.4.2 Does the College elicit feedback on the curriculum from national and international faculty? If yes, specify a few methods adopted to do the same - (conducting webinar, workshop, online forum discussion etc.). Give details of the impact on such feedback.

Yes, the college does elicit feedback on the curriculum from the faculty of IITs and other autonomous colleges in the state. In fact, few of the members of Subject Board/Academic Board of the college are from IIT, Mumbai.

1.4.3 Specify the mechanism through which alumni, employers, industry experts and community give feedback on curriculum enrichment and the extent to which it is made use of.

Mechanism for feedback:

- ✓ Online alumni feedback form
- ✓ Online employer feedback form
- ✓ Feedback obtained at annual alumni meet, Industry meet at the college.
- ✓ Oral feedback from employer and industry during informal meets or during their visits to institute for campus interviews
- ✓ Oral feedback during informal meets with local stakeholders
- ✓ Oral feedback from parents during parent meet held every year.

1.4.4 What is the quality sustenance and quality enhancement measure undertaken by the institution in ensuring effective development of the curricula?

The responsibility of assuring the quality of education lies with Internal Quality Assurance cell (IQAC), however the responsibility of sustaining and enhancing the quality of education lies with each stakeholder of the institute. IQAC consists of one member from each department with Chairman (IQAC) chairing the cell. Though internal audit takes place by this cell every semester to ensure the quality of all academic practices, the college believes in the philosophy that “*Quality is built-in and*

not added upon by testing". Hence the college continuously strives hard to set the academic systems by means of use of Information and Communication Technology (ICT) in such a way that quality automatically gets built into the product. As far as ensuring and enhancing quality of curriculum is concerned, Dean Academics through Department Academic Coordinators (DACs), one from each department, informs the college level academic policies and any other related input to the HoD and all faculty members of their department. These policies along with the feedback analysis report (feedback report obtained from different stake-holders) on the effectiveness or deficiencies of curriculum and infrastructural facilities are discussed in the department weekly meeting, followed by discussions in DAB meetings involving external stake holders.

The proposals of DAB regarding either sustaining or enhancing quality of curriculum are then ratified in SB/AB meeting. Care is taken to confirm that the curriculum takes care of Program Specific Criteria and is never single faculty dependent. Ultimate aim of the curriculum of the various programs of the institute is to transform teaching learning process in to practicing school or learning factory to produce capable graduate engineers with aptitude for research and leadership.

CRITERION II: TEACHING-LEARNING AND EVALUATION

2.1 Student Enrolment and Profile

2.1.1 How does the College ensure publicity and transparency in the admission process?

Maharashtra State Directorate of Technical Education offers wide publicity to effect admissions in various colleges/ branches of the state for M.Tech./M.E. and B. Tech. programmes. Since the college is Govt. aided, the admissions to all programmes of the college including Ph. D. (under QIP) are through government. Detailed information regarding admissions for UG, PG and Ph D programmes is displayed on the following websites besides the website of the institute.

Table 2.1: Information Regarding Admission

Sr.no	Programme		Website	Site Maintained by
1	UG	Under Graduate	www.dtemaharashtra.gov.in www.spce.ac.in	MSDTE Office CCF **
2	PG	Post Graduate	www.dtemaharashtra.gov.in www.spce.ac.in	MSDTE Office CCF **
3	PhD	Doctorate	www.unimumbai.ac.in www.spce.ac.in	MUM Office ## CCF

**CCF : Central Computing Facility

MUM : Mumbai University, Mumbai

The websites provide all information pertaining to admissions viz. Eligibility Criteria, Admissions procedure, documents to be submitted by the candidates in support of their claim for admission under different categories, fee structure etc. The information regarding admissions is also disseminated through national and regional newspapers and by inviting parents and students to attend the student counseling organized by the college on behalf of the Government. Flying announcement is also flagged on the college website [http:// www.spce.ac.in](http://www.spce.ac.in) during the period of admissions. Besides the admission office of the college supports the students and the parents before and during admission period by addressing any enquiry they may raise. Wide publicity and maintenance of transparency is thus the joint responsibility of DTE, Board of Technical Education and Mumbai University.

2.1.2 Explain in detail the process of admission put in place for UG, PG and Ph.D. programmes by the College. Explain the criteria for admission (Ex. (i) merit, (ii) merit with entrance test, (iii) merit, entrance test and interview, (iv) common test conducted by state agencies and national agencies (v) others followed by the College?

UG admissions:

Students to UG programme offering B. Tech. degree are admitted through following three categories.

Category 1: Admission after passing 12th examination and state level Common Entrance Examination. MSDTE has set the well tested regulations for admission of students to various colleges/branches. The detail procedure is as follows:

- ✓ Issue of notification- published in the leading Newspaper and websites <http://www.dte.org.in>
- ✓ Availability of online prospectus and applications
- ✓ Filling of Online Application Form for Centralized Admission to Engineering/Technology by eligible candidates
- ✓ Conducting the CET and publishing the results.
- ✓ Publishing counseling dates and schedule on the websites as well as in newspapers.
- ✓ Document Verification & Confirmation of Online Application form at Application Form Receipt Centers (ARCs)
- ✓ Display of Provisional Merit List of candidates who have confirmed the online Application Form on website <http://www.dtemaharashtra.gov.in>.
- ✓ Submission of Grievances (if any) at ARC
- ✓ Display of Final Merit List of candidates on website.
- ✓ Filling and Confirmation of Option form for Round I by candidate through his/her Login.
- ✓ Display of Allotment of CAP Round I on website.

Reporting to respective Institutes as per allotment of CAP Round I

- ✓ Filling of Online Option Form for CAP Round II by candidate through his/her Login.
- ✓ Confirmation of Option form for Round II by candidate through his/her Login.
- ✓ Display of Allotment of CAP Round II on website.
- ✓ Reporting to respective Institutes as per allotment of CAP Round II
- ✓ Filling of Online Option Form for CAP Round III by candidate through his/her Login.
- ✓ Display of Allotment of CAP Round III on website.
- ✓ CAP Round IV by counseling and reporting to respective Institute.

Category 2: Direct admission to Second Year of UG programme for diploma passed students.

There is a provision for Diploma holders for admission in the second year of the B. Tech. Program (20% seats) under Lateral entry scheme. The admission is based on the marks obtained in Diploma examinations conducted by Maharashtra Board of Technical Education. These admissions also are governed centrally at the state level, the detail information of which is available in the website <http://www.dte.org.in>.

Branch Transfer:

The admissions to second year of a particular branch are exercised by the college for the eligible and desiring students in case there is vacancy arising out of failure in successful transition of all the students to next year. The rules for this are published on the college website <http://www.spce.ac.in> academic book. This transfer is informed to Mumbai University (MU) & Directorate of Technical education. (DTE)

PG Admissions:

MSDTE has set regulations for admission of students to various PG programmes at colleges. The details about sequence of steps to be followed are listed below.

- ✓ Filling up and submission of “Online Application form” provided on the web site <http://www.dtemaharashtra.gov.in> AND Document verification and in-person confirmation of application form at ARC for GATE candidates (sponsored/Non-sponsored category)
- ✓ Declaration of Provisional merit lists for all GATE candidates. (Sponsored and Non-sponsored)
- ✓ Submission of grievance applications, if any, at ARC
- ✓ Display of Final Merit Lists on website <http://www.dtemaharashtra.gov.in>.
- ✓ Display of Institute wise Seat Distribution for Round I (Sponsored/Non-sponsored & NRI)
- ✓ Online Submission and Confirmation of Option form for CAP Round I by all GATE (Sponsored and Non-sponsored), candidates
- ✓ Revised Allotment of Sponsored/Non Sponsored category seats to candidates (Round 1)
- ✓ Reporting and Securing Admission by the Sponsored/Non-Sponsored candidates and at the revised allotted institutes.
- ✓ Display of Institute wise vacant seats for CAP Round II arisen due to non-reporting/non-allotment of CAP Round I
- ✓ Online Submission and Confirmation of Option form for CAP Round II by all GATE (Sponsored and Non-sponsored), candidates

- ✓ Allotment of Sponsored/Non-Sponsored category seats to candidates (Round II)
- ✓ Reporting and Securing Admission by the Sponsored/Non-Sponsored candidates at the allotted institutes.
- ✓ Display of Institute wise vacant seats for CAP Round III by Counseling arisen due to non-reporting/non-allotment of CAP Round II
- ✓ Round of admission by counseling (CAP Round-III) in person at DTE specified CAP center
- ✓ Reporting to the institute as per allotment in Counseling Round (CAP Round-III)

Ph. D. Admission

Admissions to Ph. D. programmes are carried out as per rules and regulations stipulated by Mumbai University & ASADHA (2009) of UGC as regular research student. The details about process are available on website www.mu.ac.in & www.spce.ac.in in brief are given below. The notification about admission to Ph.D. programme is displayed on Mumbai University website. The applications for admission to Ph. D. programme are invited by the University in the month of June every year. On-line/off-line Ph.D. admission entrance test is conducted by the university and list of candidates eligible for appearing at interview for Ph.D. admission is displayed on Mumbai University website. During interview the eligible candidates discuss and interact with the members of committee about the proposed research work. Verification of original documents is also carried out during interview.

Thereafter the allotment of guides to the selected candidates is displayed by the institute on website and is also communicated to selected candidates. The selected candidates identify the research center and take the admission for Ph. D. programme. The admitted candidates follow the process of Ph.D. programme defined by Mumbai University. The Ph. D. programme process includes submission of synopsis, approval of synopsis, registration, course work, submission of progress reports, pre-submission seminar at research centre, scrutiny by committee at university, submission of thesis, viva-voce and award of degree.

Ph.D. under QIP

Admissions to Ph. D. programme under QIP scheme are carried out by office of Principal Coordinator (QIP) (currently IIT Kanpur) as per rules and regulations stipulated by AICTE for QIP research Students. The details about the admission process are available on AICTE website and in brief are given below. The applications are invited by QIP Principal Coordinator – PC (normally one of the IITs/IISc) in the month of October/November every year for advance admission to Ph. D. programme (final admission in the following/next year).

The applications received are forwarded by PC to respective QIP coordinators of various QIP centres. The applications are scrutinized for eligibility by respective

departments in the college and are submitted to local QIP coordinator for further processing. The eligible candidates are called for an interview as per the schedule declared by PC. The recommended preferential list of candidates is submitted to the PC. The final selection of the candidates is decided in the meeting of National QIP Coordination Committee (NQCC).

The list of selected candidates is conveyed by PC to respective QIP centers and is also displayed on AICTE website. The candidates undergo a preregistration programme of 60 days to decide topic and identify the supervisor/guide. After successful completion of pre-registration programme the candidates are offered provisional admission. The admitted candidates follow the normal process of Ph.D. programme defined by Mumbai University as mentioned in above paragraph.

2.1.3 Does the College have a mechanism to review its admission process and student profiles annually? If yes, what is the outcome of such an analysis and how has it contributed to the improvement of the process?

Yes, the college does have a mechanism to review its admission process and student profiles annually. Such data is discussed in Institute Development Committee (IDC) meetings and presented in Academic Board. The measures to attract better cream of students are discussed and implemented every year.

2.1.4 What are the strategies adopted to increase / improve access to students belonging to the following categories?

*** SC/ST**

*** OBC**

*** Women**

*** Different categories of persons with disabilities**

*** Economically weaker sections**

*** Outstanding achievers in sports and extracurricular activities**

- ✓ Admissions are done as per state Government reservations policies prevailing at the time of admission.
- ✓ Separate counseling sessions are conducted for OBC/SC/ST students with different cut off marks. Details regarding schemes of Government for financial assistance to such students also are explained.
- ✓ As per Government admission rules certain fix percent of quota is reserved for girl students in every branch of the college.
- ✓ Special counseling sessions are conducted for the persons with physical disabilities and also for those who are outstanding achievers in sports and extra- curricular activities.

- ✓ Economically weaker section students are given counseling regarding various government schemes of financial assistance and also about the Bank Loan facility to aid them for higher education.

2.1.5 Furnish the number of students admitted in the College in the last four academic years.

Following table gives the information regarding the number of students admitted in the College in the last four academic years. Both category wise and gender wise information is presented.

Table 2.2: UG Programme: Regular Admissions

UG Program	Categories	Year 1 2014-15		Year 2 2013-14		Year 3 2012-13		Year4 2011-12	
		Male	Female	Male	female	Male	Female	Male	Female
Civil Engineering	SC	6	2	4	2	4	3	4	2
	ST	4	2	3	1	0	2	0	0
	OBC	9	4	7	4	9	4	13	3
	General	28	4	25	8	28	6	25	7
	Others	10	3	2	1	5	0	6	3
Mechanical Engineering	SC	7	2	2	2	6	2	5	3
	ST	2	1	3	1	4	0	0	0
	OBC	8	3	8	4	8	3	12	3
	General	27	4	28	4	26	7	29	6
	Others	11	1	6	0	5	0	4	1
Electrical Engineering	SC	3	3	4	2	6	1	8	1
	ST	2	2	2	1	3	1	2	0
	OBC	7	3	9	2	8	3	10	3
	General	27	8	24	11	24	8	23	8
	Others	7	1	3	1	4	0	8	0

Table 2.3 : UG Programme : Lateral Entry

UG Program	Categories	Year 1 2014-15		Year 2 2013-14		Year 3 2012-13	
		Male	Female	Male	female	Male	Female
Civil Engineering	SC	6	2	4	2	4	3
	ST	4	2	3	1	0	2
	OBC	9	4	7	4	9	4
	General	28	4	25	8	28	6
	Others	10	3	2	1	5	0
Mechanical Engineering	SC	7	2	2	2	6	2
	ST	2	1	3	1	4	0
	OBC	8	3	8	4	8	3
	General	27	4	28	4	26	7
	Others	11	1	6	0	5	0
Electrical Engineering	SC	3	3	4	2	6	1
	ST	2	2	2	1	3	1
	OBC	7	3	9	2	8	3
	General	27	8	24	11	24	8
	Others	7	1	3	1	4	0

**Table 2.4: Admissions to PG Programs
(To add data of 2015-16)**

PG Program	categories	Year 1 2014-15		Year 2 2013-14		Year 3 2012-13		Year 4 2011-12	
		Male	Female	Male	Female	Male	Female	Male	Female
Thermal Engineering (TE)	SC	2	0	3	0	0	0	1	0
	ST	0	0	0	0	0	0	0	0
	OBC	3	0	2	0	2	0	3	0
	General	11	1	10	2	14	0	11	1
	Others	1	0	1	0	0	0	0	0
Machine Design (MD)	SC	2	0	2	0	0	0	0	1
	ST	0	1	0	0	0	0	0	0
	OBC	3	0	4	1	3	0	2	1
	General	10	0	7	1	10	1	5	0
	Others	2	0	3	0	1	0	3	0
Construction Mgmt. (CM)	SC	2	0	2	1	2	1	2	0
	ST	0	1	0	0	0	0	1	0
	OBC	1	2	7	0	5	0	1	0
	General	8	0	5	3	8	1	9	2
	Others	3	0	0	0	0	1	2	0
Power Electronics & Power Systems (PEPS)	SC	3	0	-	-	-	-	-	-
	ST	0	0	-	-	-	-	-	-
	OBC	2	0	-	-	-	-	-	-
	General	9	3	-	-	-	-	-	-
	Others	1	0	-	-	-	-	-	-
Structural Engineering	SC	1	0	2	1	2	0	2	0
	ST	1	0	0	0	0	0	0	0
	OBC	1	2	6	1	2	0	2	0
	General	12	0	6	2	12	1	8	2
	Others	1	0	0	0	1	0	0	0

2.1.6 Has the College conducted any analysis of demand ratio for the various programmes offered by the College? If so, indicate significant trends explaining the reasons for increase / decrease.

The admissions to the engineering programs are done centrally through Directorate of Technical Education (UG, PG programs) while through office of Principal Co-coordinator under QIP program for Ph D program. The college has information about the number of students admitted to Diploma, UG and PG programs; however no idea about the number of applications received by the corresponding admission authorities. Hence demand ratio cannot be indicated in the following tables. Since the applications

for Ph D program are received directly by the college academic office, the demand ratio for these programs in various departments is indicated in the following table. There is no increase in the intake capacity of UG programs in last four years. However the college observed a general trend of many graduates (BE/B.Tech.) to opt for higher studies.

Table 2.5: Details of PG Intake

Sr No.	Branch	Specialization	2011-12	2012-13	2013-14	2014-15	2015-16
1	Mechanical	Machine Design	18	18	18	18	18
		Thermal Engg.	18	18	18	18	18
2	Electrical	Power Control & Power Systems	-	-	-	18	18
3	Civil	Construction Management	18	18	18	18	18
		Structural Engineering	18	18	18	18	18

The admissions are more than 95% for all the programs as per sanctioned strength throughout the years.

2.1.7 Was there an instance of the College discontinuing a programme during last four years? If yes, indicate the reasons.

No, none of the programmes of the college has been discontinued in last four years. But the institute started a new PG programme, Power Control & Power System in Electrical engineering.

2.2 Catering To Student Diversity

2.2.1 Does the College organize orientation / induction programme for freshers? If yes, give details of the duration of programme, issues covered, experts involved and mechanism for using the feedback in subsequent years.

Yes. The college organizes a one-day orientation programme for all freshers immediately after their admission. The Principal of the college addresses the gathering of the freshers and their parents by welcoming and giving brief details about the mission, philosophy, culture and objectives of the institute. The distinctive features of the college as well as teaching learning methodologies, the various facilities available in the campus to build their personality are explained in detail. After the Principals address, the freshers in groups (as per department) are taken to various central facilities like Central Library, Centralized Computing Facility, Workshop, Drawing Hall, Sports facility etc. by the members of corresponding department's. After the visit to central

facilities, the students admitted to a program assemble in respective class room where they are addressed by the Head of the concerned department to inform about the departmental facilities and introduce department faculty members. The students are then taken for round to visit the parent department and the department laboratories, office, hostel etc.

2.2.2 Does the College have a mechanism through which the “differential requirements of student population” are analyzed after admission and before the commencement of classes? If so, how are the key issues identified and addressed?

At the time of registration, a team of faculty members interact with the students and their parents to get to know the background “of the student and if he requires any special attention. The key issues generally identified are:

- ✓ Some of the students come from rural area and vernacular medium school learning. They lack the confidence and clarity while speaking in English. In general, they lack communication skills.
- ✓ Some of the students are from economically poor background and have financial problems. Such students are informed about various government and non-government schemes and enough guidance is given for applying for financial assistance.
- ✓ Some of the students seem to be weak in understanding basic principles associated with engineering courses. This is generally evident from their CET score and the score in Physics, Chemistry and Mathematics. Such students are given personal attention by the faculty of first year by conducting number of extra lectures and holding number of tests/retests so as to improve their understanding.
- ✓ Apart from this the college also conducts a diagnostic test to assess the level of expertise of the students in various areas like aptitude, mathematics, english etc. The students not performing well in this test are given remedial coaching.

2.2.3 Does the College have a mechanism through which the College provides bridge /Remedial /add - on courses? If yes, how are they structured into the time table? Give details of the courses offered, department-wise/ facultywise?

Bridge Courses:

Yes, the college does provide bridge courses for the topics having gaps in the syllabus. Generally such gaps are covered by the concerned faculty whenever required (for the purpose of the continuity of the subject matter) during the regular time table hours. Separate one hour slot is given apart from the regular time table on the working day for the same.

Remedial Classes:

- ✓ College has a very good mechanism for continuous evaluation and monitoring the progress of the students. This helps to identify slow learners.
- ✓ Slow learners are given enough assistance during tutorial classes by clarifying their doubts, re-explaining the critical conceptual topics and giving them extra assignments so that these students improve their performance.
- ✓ Some of the faculty uploads their lectures ppts & videos on Moodle to facilitate slow learners to download those and learn at their own pace.
- ✓ The students remaining absent frequently and hence failing in performance are counseled, their parents are consulted and collective efforts are taken by the parents and the institute to see that students attend the classes regularly.
- ✓ National Programme for Technologically Enhanced Learning (NPTEL) Courses is made available on the CCF server which are accessible through institute website & wi-fi connectivity from anywhere in the campus.

Table 2.6A : Sample of Remedial Classes (PG Courses Mech. Engg Department)

PG Course	2014-15	2013-14	2012-13
Computer Aided Design	Digital Manufacturing	Knowledge Base Engineering	Design for Assembly
Pressure Vessel Design	Nozzle reinforcement	Wind Analysis	Finite Element Based analysis of pressure vessels
Machine Dynamics & Vibration	Eulers equation of Motion	Vibration Measurement	Non Linear Vibration

Table 2.6B : Sample of Remedial Classes (UG Courses Mech. Engg Department)

UG Courses	2014-15	2013-14	2012-13
Manufacturing Science	Gravity die Casting, Carbon dioxide Molding, welding	Shaper Mechanism, Non destructive testing	Abrasive jet machining, Electrochemical machining
Strength of Material	Shear Force bending Moment diagram	Bending Stress	Deflection of beam
CAD/CAM/CIM	Virtual Reality, Product Life Cycle Management	Green Manufacturing, 2D & 3D Transformations	Computer Integrated Manufacturing

2.2.4 Has the College conducted a study on the incremental academic growth of different categories of students; - student from disadvantaged sections of society, economically disadvantaged, physically challenged and slow learners etc.? If yes, give details on how the study has helped the College to improve the performance of these students?

This issue is dealt through the Mentorship Programme. In this program 10-15 students are assigned to each faculty in the department. The faculty of the college conducts a study on the incremental academic growth of the students of his/her course by monitoring the performance of the students in the internal tests, practical/tutorials, quiz and End-Semester examinations and also the attendance. The students having poor performance are given assistance as far as their technical doubts are concerned by providing support of text books or literature etc. The poor attendance students are dealt separately to find out the genuine reasons of absenteeism and appropriate remedial action is taken to see that the student becomes regular. Economically disadvantaged students are given information about various government and non-government assistance schemes and are assisted by college staff to help them to apply for free ships or scholarships. Students are admitted under AICTE's Tuition Fee Waiver (TFW) scheme as per the norms. Apart from this, institute has also started poor boys fund to help the needy.

Physically challenged students are given all assistance as is required by them. Ramps are provided for the buildings and also available at toilets.

2.2.5 How does the institution identify and respond to the learning needs of advanced learners?

The institute identifies the advanced learners through the following processes.

- ✓ Very good performance in internal tests and end- semester examination.
- ✓ Active participation and learning during lecture and practical sessions.
- ✓ Performing minimum required experiment and the extension of that during practical sessions.
- ✓ Exhibiting willingness to work on independent projects
- ✓ Timely & outcome oriented Execution of Mini Projects
- ✓ Willingness to work extra in laboratories after regular hours
- ✓ Participation in student workshops, presenting papers in seminars, attending conferences/workshops/seminars organized in the parent institute or other nearby institutes.
- ✓ Prizes won in co-curricular activities

Strategies adopted to respond to the requirements of advanced learners are as follows:

- ✓ Helping them to work on innovative projects
- ✓ Encouraging them to participate in seminars, workshops events organized by the department.
- ✓ Guiding them for GATE, IES, GRE etc.
- ✓ Helping them to get internship at industries for their projects or dissertations.
- ✓ Motivating the advanced learners to interact with slow learners of their class and juniors for clearing their doubts.
- ✓ Assisting them to publish the results of UG project/PG dissertation in journals and also present those at national and international journals/conferences.
- ✓ Inviting resource persons from industries and academic institution to deliver guest lectures on the advanced topics to give exposure to students regarding current technology and contemporary issues in areas of engineering.
- ✓ Providing open electives from departments other than parent department so that students develop breadth of knowledge in areas other than their own core domain.

2.2.6 How does the institution cater to the needs of differently-abled students and ensure adherence to government policies in this regard?

Following facilities are provided for the differently abled students.

- ✓ Special attention is given to the differently abled students during teaching.
- ✓ Support is provided in learning process by providing extra time, study material, question banks etc.
- ✓ Special arrangements are made during examinations so that they are comfortable (sitting arrangement, writer if required, extra time of half an hour etc.).
- ✓ Lecture halls, examinations halls, hostel rooms are arranged on the ground floor.
- ✓ Ramps or at least hand rails are provided for going to first floor.
- ✓ Physically disabled students are provided with scribes.
- ✓ Medical facility is made available in case of emergency.

All other facilities are provided as per the norms of State and Central Government.

2.3 Catering To Student Diversity

2.3.1 How does the College plan and organize the teaching, learning and evaluation schedules? (Academic calendar, teaching plan and evaluation blue print, etc.)

Academic Calendar:

The college prepares the academic calendar for UG and PG separately before the beginning of every academic year and is displayed on the department notice boards as well as on the college website. Academic calendar mentions the academic days of delivery, schedule for conduct of mid-semester and end semester examinations,

assessment, submission of attendance defaulter report, declaration of results, other institute level events (co-curricular and extra-curricular) and the holidays. A sample copy of the academic calendar for the first semester of 2015-16 is as below.

Table 2.7 Academic calendar

Sardar Patel College of Engineering, Andheri, Mumbai-58
Calendar for Even Semester 2015-16

S. No.	Date	January	February	March	April	May	June	July
1	1							Allocation of PG
2	2					Assessment of Project Work Final Year UG Students		Dissertation Supervisors, Re- Examination of Odd and Even Semester Courses
3	3		SPRIT (Sports Fest)	Display of test I Result, Plan for Remedial Coaching				
4	4			Remedial Coaching Begins		Taking Feed Back from Student		Ph. D. Annual Progress Review
5	5					Display of Attendance Record		
6	6					Even Semester Ends	Declaration of End Semester Results	
7	7				Display of Test I Result, Plan for Remedial Coaching		Remedial Coaching Begins	Final Viva-Voce Examination (M.Tech. - II)
8	8		Display of Exam Seat No's		Remedial Coaching Begins			Showing Assessed Answer Books and Synoptic to Students
9	9		Issue of Admit Card					
10	10							
11	11							Declaration of Re-Exam Result of Odd Semester
12	12							
13	13							Showing Assessed Answer Books
14	14							
15	15							Declaration of Re-Exam Result of Even Semester
16	16							
17	17							
18	18	Even Semester Begins	TEST I	Display of attendance record				
19	19	Enrol for elective Courses						
20	20	Declaration of Re-Exam Result of Odd Semester						
21	21	Reviewing of Project Groups, Project Topic and Supervisor						
22	22							
23	23							
24	24							
25	25							
26	26							
27	27	Declaration of Re-Exam Result of Even Semester	SPECTRA (Technical Fest)		Dissertation Stage-II Seminar (M.Tech. - II) Farewell to Final Year Students			
28	28			Convocation & Annual Day (Prize Distribution)				
29	29							
30	30							
31	31					Showing Assessed Answer- Books and Synoptic to		

Teaching Plan:

- ✓ For every theory course, lesson plan is prepared by the concerned faculty to ensure uniform teaching throughout the semester.
- ✓ After approval by HoD/Module coordinator, the same is uploaded along with a copy of the syllabus on the Moodle.
- ✓ Teaching plan clearly mentions the objectives, and outcomes of the course which students is supposed to achieve at the end of the course.
- ✓ In –semester & end semester feedback is collected from the students and is analyzed to orient the teaching in such a way that average student attains the outcomes to an expected level.

Evaluation Blue Print: (UG and PG)

- ✓ The evaluation of theory courses is kept transparent. After every evaluation (In-semester, End-semester), the answer books are shown to the students and are counseled for mistakes & errors. Any genuine discrepancy reported by the student in assessment is rectified before finalizing the marks for any of the evaluations.
- ✓ The students failing to acquire pass grade in any of the courses are permitted to reappear for re- examination conducted before the commencement of the next academic year. The evaluation of the answer books of such students is done in the same manner as the usual end-semester examination. The details of planning and organizing teaching, learning and evaluation schemes are evident from the following flow-chart.

Teaching, learning and evaluation schemes flow-chart

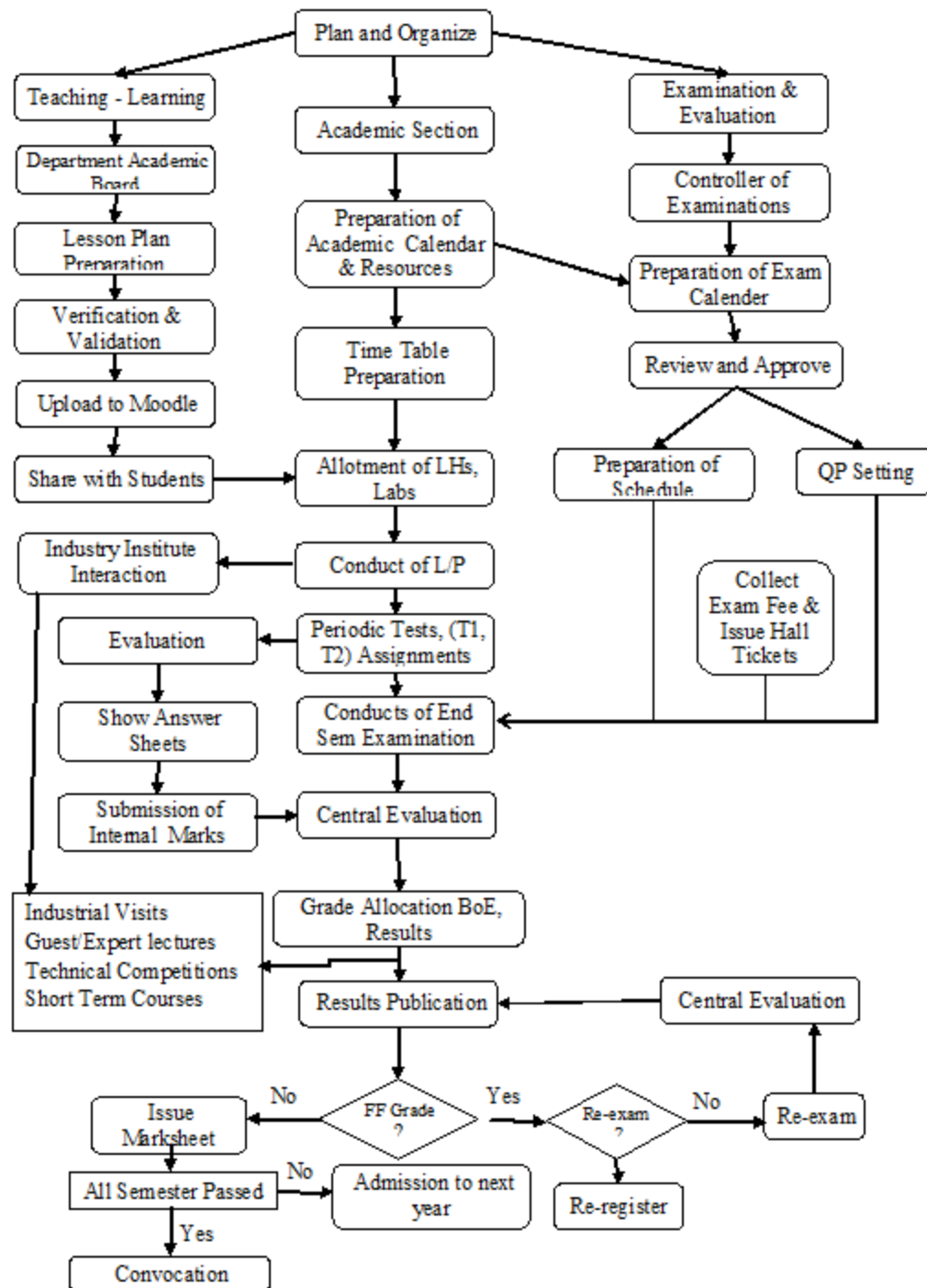


Fig.2.1 Teaching Learning & evaluation scheme flowchart

2.3.2 Does the College provide course outlines and course schedules prior to the commencement of the academic session? If yes, how is the effectiveness of the process ensured?

Yes, as explained above, the lesson plan with topic to be covered in a particular class is displayed on Moodle which is accessible to the students. The students come prepared for the classes and raise their doubts during the lecture hours which lead to active learning by the students.

2.3.3 What are the courses, which predominantly follow the lecture method? Apart from classroom interactions, what are the other methods of learning experiences provided to students?

For every theory course, class room lecture method is followed supported by Chalk and Board and LCD projectors. Since the college has adopted Outcome Based Education philosophy, the faculty members are orienting the teaching method towards active learning by students than the traditional way of monolog. Active learning methods include Group Discussions, Quiz, Project Based Learning, Video Films, NPTEL lectures, Field Visit, Industry Visit etc. Few online videos developed by Bentley systems and MOOC facility from Emerson , ISHRAE & IET are also made available to students

2.3.4 How “learning” is made more student-centric? Give a list of participatory learning activities adopted by the faculty that contribute to holistic development and improved student learning, besides facilitating life-long learning and knowledge management.

The entire academic process of planning, delivery and transparent assessment is designed to be student centric. Based on the contents of the topic to be taught in a particular class, the curriculum delivery is a mix of different teaching methods viz. chalk and talk, GDs, demonstrations, laboratory sessions, abstract concepts through animations, video lecturing etc. The participative learning activities implemented by the faculty include:

- ✓ The institute Vision-Mission reflects focus on students centric thinking
- ✓ By allotting first 5-7 minutes of the lecture to revise the contents covered in the last lecture by asking some questions to check the understanding of the students and to develop a link for the topic of current lecture. Any doubts of the students are clarified through reexplanation or by dissecting the topic in bits interactively up to a level where student gets his doubt cleared. **(Active Learning)**
- ✓ By asking quiz questions during lecture session based on pre knowledge or provoking students to think critically. **(Active Learning)**
- ✓ By calling group discussions on the assignment problems **(Develops Team Work, Communication Skills, Think, Share and Pair attitude)**
- ✓ By allotting group project and mini-projects to a group of 3-4 students under the

supervision of a faculty. **(Helps “Learning by Doing”, develops Team work spirit, lifelong learning attitude and professional skills)**

- ✓ By asking the students to carry out literature/ field survey, submit a written report in standard format and then delivering an oral presentation on the same. Such seminars are generally on the contemporary issues in relevant engineering disciplines (literature review) or real world problem (field survey). **(Helps to develop lifelong learning attitude and communication skills)**
- ✓ By asking the students to perform extensions (in extra hours or on holidays) of the main practical carried out by them during regular time table hours and making arrangements for the availability of the department facility. **(Helps to develop critical thinking and lifelong learning attitude.)**
- ✓ By providing information about the specific websites for accessing e_material, motivating the students to explore technical material, online lectures on the areas of their interest and by uploading learning material available with the faculty on Moodle site enable them to learn the topics at their own pace. Thus, all these participative learning activities contribute to holistic development and improved student learning, besides facilitating life-long learning and knowledge management.

2.3.5 What is the College policy on inviting experts / people of eminence to provide lectures / seminars for students?

The college encourages the departments to organize expert lectures by inviting faculty from IITs, reputed academic institutes (National or International) and industry experts. The seminars, workshops, conferences also are organized centrally by the institute or separately by each department. During the annual three-day technical activity (titled SPECTRA), plenary sessions by eminent personalities are organized. On an average, two seminars, two workshops and four expert lectures are organized by each department every year. The detail information about various guest lectures organized are available in the evaluative reports of the respective department.

2.3.6 What are the latest technologies and facilities used by the faculty for effective teaching? Ex: Virtual laboratories, e-learning, open educational resources, mobile education, etc.

The latest technologies and facilities used by the faculty for effective teaching are:

- ✓ Computer aided teaching methods through power point presentations and multi-media projectors
- ✓ Animations to teach abstract concepts
- ✓ Use of wooden Models, Mechanisms etc
- ✓ Use of MOODLE
- ✓ E_learning material (e_books and e_journals)
- ✓ Digital Library
- ✓ Use of RPT models

2.3.7 Is there a provision for the services of counselors / mentors/ advisors for each class or group of students for academic, personal and psycho-socio guidance? If yes, give details of the process and the number of students who have benefitted.

Yes,

- ✓ Institute has appointed Separate Mentor who visits the institute twice in a week and gives guidance/mentors to the students.
- ✓ The meetings with academically poor and attendance wise defaulter students are held twice in a semester.
- ✓ Under the Mentorship Program faculties appointed as mentors counsel the students as & when needed

2.3.8 Are there any innovative teaching approaches/methods/ practices adopted/put to use by the faculty during the last four years? If yes, did they improve the learning? What methods were used to evaluate the impact of such practices? What are the efforts made by the institution in giving the faculty due recognition for innovation in teaching?

Some of the faculty implement following innovative practices in addition to conventional lecture method to improve the learning of the students.

Mini-project Based Learning:

In this method of learning, students are assigned a task of putting theory into practice to develop some small application. Generally students of 2nd year and 3rd year of engineering are given mini-projects in groups of 5-6 students either as a course requirement or additional task beyond curriculum. This activity helps students to understand the relevance of the theory, and develop hands on and professional skills.

Seminar Based Learning:

Faculty assigns the topics beyond curriculum and of current relevance from their area to the active students of the class for presenting a seminar to the class. For the final year UG project, presenting the synopsis of the seminar topic is a course requirement while every student of PG is required to deliver two seminars (one in each semester) in the first year of his program.

Computer Assisted Learning:

The college has procured the required software packages for all departments to learn their courses through various simulation software packages. Some of such application software help to design the civil structures, mechanical parts and machines, electrical/electronic products etc. The various tools available with the department

which students use for their laboratory session or project work are “CATIA, DELMIA, PLM, SIMULIA (Mechanical), Primavera, GIS, GPS (Civil), MATLAB, LabView, TINA, ETAB, SEQUEL (Electrical) etc.

Industrial Visits and Field Studies:

Every department organizes visit to relevant industries. The students of Civil department or Environmental studies pay the field visits to various sites to study the prevailing or expected environmental problems there and suggest the solutions. Similar Industrial visits are also conducted by electrical & mechanical department. It has been found that the students actively take part in all the above activities and learn the courses with fun. Due recognition and appreciation of a teacher is done during Faculty meetings and IDC meetings for the innovation in teaching adopted by him/her.

2.3.9 How does the College create a culture of instilling and nurturing creativity and scientific temper among the learners?

Following steps are taken by the college to create a culture of instilling and nurturing creativity and scientific temper among learners.

- ✓ 5 to 20% courses of curriculum deal with Basic sciences, Mathematics and fundamental courses in core engineering disciplines.
- ✓ College offers an opportunity to the students to listen to eminent personalities from National Research Institutes and Industries by organizing Expert Lectures.
- ✓ Alumni pursuing higher studies in India and abroad are invited to interact with students and to share their experience to motivate students to take up R&D type final year projects.
- ✓ College encourages students to participate in co-curricular activities (paper presentation, project competition, Technical Quiz, Poster presentation etc.) organized in the parent institute or any other institute. This helps students to develop in themselves learning attitude, analytical skills, communication skills and creativity.
- ✓ Students are encouraged to opt for inter-disciplinary electives which help them to cultivate inter-disciplinary approach in problem solving.
- ✓ PG/PhD students are given compulsory (institute core) course on Research Methodology in which they are expected to critically review few recent journal papers and submit a review report on that.

2.3.10 Does the College consider student projects a mandatory part of the learning programme? If so, for how many programmes is it made mandatory?

* **Number of projects executed within the College**

* **Names of external institutions associated with the college for student project work**

* **Role of the faculty in facilitating such projects**

Yes, student projects are a mandatory part of the learning programme for all programs.

UG Programmes:

Following table shows the number of UG batches those executed their final year projects within the college & in the industries

Table 2.8 : In-house UG Projects

ACADEMIC YEAR	INDUSTRIAL	IN-HOUSE	TOTAL NO OF PROJECTS
2012-2013	4/42	38/42	42
2013-2014	8/45	37/45	45
2014-2015	14/26	13/26	27
2015-16	1/18	17/18	18

PG Programmes:

Following table shows the number of PG students who executed their M. Tech. dissertation within the college.

Table 2.9: In-house PG Projects
PG (Thermal Engineering) – PROJECT DETAILS

ACADEMIC YEAR	INDUSTRIAL	IN-HOUSE	TOATAL NO OF PROJECTS
2011-2013	2/16	30/16	32
2012-2014	5/16	27/16	32
2013-2015	9/18	27/18	36

PG (Machine Design) – PROJECT DETAILS

ACADEMIC YEAR	INDUSTRIAL	IN-HOUSE	TOATAL NO OF PROJECTS
2011-2013	23/48	07/48	30
2012-2014	12/46	20/46	14
2013-2015	22/53	13/53	17

Names of External institutions associated with college for the dissertations of PG students:

IITs from Mumbai, Delhi are the academic institutes of national reput and industries like Mahindra & Mahindra, Larsen & Toubro, AKER Solutions, TOYO Engineering, Kirloskar Engines Pune etc. are associated with college for the dissertations of PG students.

Role of faculty in facilitating such projects:

Department generally allocates one or two UG project and batches (batch of 3 students) and two PG students for dissertation to each eligible faculty member. In case of sponsored projects, the problem is assigned by the sponsor while in case of in-house projects; the problem is defined by the faculty. Faculty encourages students to carry out project on current research areas and real time problems sponsored by industry. Students refer papers from peer reviewed journals like IEEE, ACM, and Springer etc. Faculty guides students for implementing the idea presented in the already published paper with some extension. In both cases, the allocated faculty acts as a Guide, monitors the progress continuously, helps in solving their difficulties throughout the project/dissertation phases. Students get support for presenting their work in various competitions, conferences. Virtual instruments and required simulation tools are made available to the students at the department or central level. The Guide takes the demonstration of the project work and reviews the written reports from time to time. The in semester work and end-semester work is evaluated by a group of three faculty members, Guide being one of them. Recently this evaluation has been done using the rubrics developed by the respective department.

2.3.11 What efforts are made to facilitate the faculty in learning / handling computer-aided teaching/ learning materials? What are the facilities available in the College for such efforts?

Following facilities are made available by the college to facilitate computer aided teaching/learning.

- ✓ Every faculty is provided with Desktop PC, Printer, Internet & Wi-Fi connection.
- ✓ Each department is provided with sufficient number of computers and few laptops for senior professors with intra-net and internet facility.
- ✓ Each department is provided with seminar hall with LCD and multimedia facility to conduct Guest lecturers or seminars.
- ✓ The class rooms of each department are fitted with LCDs.
- ✓ A very good Digital Library with on-line access to IEEE, Springer, Elsevier, ASME, ASCE is available with the college.
- ✓ Laboratories are equipped with modern learning software.
- ✓ All academic practices (like uploading of syllabus, lesson plan, question bank, attendance, results, assignments on Moodle besides setting question papers, result analysis etc) are computer based and all faculty have been given in-house training on the same.
- ✓ Apart from the facilities available at the college, some orientation courses are conducted for the newly joined faculties. Also college encourages faculty members to participate in workshops organized by other institutes.

2.3.12 Does the College have a mechanism for evaluation of teachers by the students / alumni? If yes, how is the evaluation used in achieving qualitative improvement in the teaching-learning process?

Yes, college has a mechanism of evaluation of teachers by students. The feedback form contains the points related to:

- ✓ Availability of lesson plan, syllabus, course outcomes etc on Moodle
- ✓ Conduct of course as per lesson plan
- ✓ Preparedness of teacher for conduct of lectures and practical
- ✓ Coverage of course contents
- ✓ Clarity about content delivery
- ✓ No. of lectures delivered
- ✓ Availability of teacher in the campus for clarification of doubts
- ✓ Communication and effective class monitoring

These forms are filled on line and are analyzed for above parameters. A soft copy of this analysis is uploaded on the faculty site of Moodle. The Head of the department, discuss the teaching problems with the faculty having poor feedback report and counsel the faculty to improve it next time. The institute faculty has attended workshop on Pedagogy to improve their teaching. Alumni are generally consulted for suggesting modifications in the curriculum as per their experience in field. In yearly alumni meeting, feedback forms are filled by them, suggesting improvements over syllabus content, teaching methodologies etc. Feedback from employer is taken into consideration for up gradation of syllabus.

2.3.13 Does the institution face any challenges in completing the curriculum within the planned time frame and calendar? If yes elaborate on the challenges encountered and the institutional approaches to overcome these.

No, the institution does not face any challenge in completing the curriculum within the planned time frame and calendar. Right from the beginning of the semester, the faculty keeps a track of the completion of syllabus as per lesson plan and conducts extra classes as when required to keep pace with the lesson plan. In case, if classes are missed due to some sudden unavoidable reason common to all branches of the institute, then the schedule for compensating the academics is made by every faculty in consultation with Head of the department (HOD).

2.3.14 How are library resources used to augment the teaching-learning process?

The details regarding the infrastructure of the Central Library and the facilities provided by Library are presented in Section 2.4. In brief, the library is equipped with around 45,000 books in print form. Besides, the digital library has more than 10,000 e_books, 800 e_journals and internet access to IEL, ASME, Science Direct, ASCE journals and NPTEL video lectures. The library is linked to DELNET, SHODHSINDHU, as a participant is Resource sharing network. The SLIM21Web OPAC is the tool deployed by the library to provide access to the collection.

With input from presentation in the beginning of semester “**Know Your Library**”, above listed resources and facilities are used properly and effectively by both UG/PG students and faculty members to augment the teaching-learning process. The Librarian prepares handbook & Annual Report of the library.

2.3.15 How does the institution continuously monitor, evaluate and report on the quality of teaching, teaching methods used, classroom environments and the effect on student performance?

The quality of teaching, the effectiveness of teaching methods is generally judged from the student feedback reports as well as their performance in various examinations. The class coordinator reviews the average attainment of the course outcomes which indicates the quality of teaching. If this average attainment is low, the academic committee analyses the reasons critically. The internal audit team under the leadership of Chairman IQAC submits such reports after inspection and asks the departments to submit the compliance or action plan on such cases. As far as classroom environment is concerned, the maintenance team of the college carries out the regular housekeeping and cleanliness. All the classrooms and laboratories in the college are spacious, with fresh air and sufficient lighting conditions. A large number of big trees outside the buildings help to give green environment for learning throughout the year.

2.4 Teacher Quality

2.4.1 What is the faculty strength of the College? How many positions are filled against the sanctioned strength? How many of them are from outside the state?

The sanctioned faculty strength of the college is fifty nine (59). However, the filled posts against regular are only forty-six (46) with regular higher level posts remaining vacant due to retirement of previous regular faculty and lack of applicants for higher level posts in spite of repeated advertisements through newspapers and DTE web-site as well as college website. To meet the requirement of Professors and Associate Professors (especially for PG teaching), few retired faculty have been appointed on the contractual basis. The total contractual faculty (against posts of Professor, Associate Professor and Assistant Professor) filled by the institute is 10, making a total of 58 against 59 sanctioned posts.

Table 2.10: Regular Faculty Positions

DEPARTMENT	POST	SANCTIONED	FILLED	VACANT
INSTITUTE	DIRECTOR	01	01	00
MECHANICAL	PROFESSOR	02	02	00
	ASSOCIATE PROFESSOR	05	02	03
	ASSISTANT PROFESSOR	10	09	01
CIVIL	PROFESSOR	03	02	01
	ASSOCIATE PROFESSOR	05	03	02
	ASSISTANT PROFESSOR	10	07	03
ELECTRICAL	PROFESSOR	02	--	02
	ASSOCIATE PROFESSOR	04	04	00
	ASSISTANT PROFESSOR	10	10	00
PHYSICS	ASSISTANT PROFESSOR	01	01	00
CHEMISTRY	ASSISTANT PROFESSOR	01	01	00

MATHS	ASSISTANT PROFESSOR	02	02	00
INSTITUTE	System Analyst	01	00	01
INSTITUTE	Workshop Superintendent	01	01	00
INSTITUTE	T.P.O.	01	01	00
	TOTAL	59	46	13

Contract Faculty position: Details of faculty recruitment on contract basis on UG and PG wing for the Academic year 2014-15 is as follows:

Table 2.11: Contractual Faculty Appointed for 2014-15

BRANCH	PROFESSOR UG+PG	ASSOCIATE PROFESSOR UG+PG	ASSISTANT PROFESSOR UG+PG	TOTAL
MECHANICAL	--	0+3	0+03	13
CIVIL	--	--	--	--
ELECTRICAL	--	--	10+04	14

2.4.2 How are the members of the faculty selected?

- ✓ Recruitment procedures/ Promotional policies for faculty are as per AICTE/Government of Maharashtra/Mumbai University norms .
- ✓ Promotions for teaching staff are effected through Career Advancement Scheme of AICTE/GoM/Mumbai University.

Procedure for faculty selection is given below:

The advertisement for filling up the vacant teaching posts is given in one national newspaper and one state newspaper. The details regarding eligibility criteria for

application as per norms are displayed on the college website. After receiving the applications, a scrutiny is carried out and a list of eligible candidates selected for interview with details of interview dates are published on the web site. The interviews are held by a duly constituted Selection Committee. After interviews, the selected candidates are given appointment orders. The composition of selection committee is as given below:

Table 2.12: Composition of Selection Committee

Chairman of the Committee 1 No.	1 No.
Subject Experts	2 No./ 3 No
AICTE Nominee	1 No.
Vice Chancellor's/ BC Nominee	1 No.
D. T. E. Nominee	1 No.
Member Secretary (Principal of the institute)	1 No.

2.4.3 Furnish details of the faculty

Table 2.13: Faculty Qualification Details
Faculty Qualification Details

Highest Qualification	Professor**		Associate** Professor		Assistant # # Professor		Total
	Male	Female	Male	Female	Male	Female	
Regular Faculty							
D.Sc./D.Lit.							
Ph.D.	05	--	06	--	06	02	19
M.Phil./MTech			01	03	12	06	22
B.E					01	04	05
Contractual Faculty							
Ph.D.	--	--	--	--	--	--	--
M.Phil.	--	--	--	--	--	--	--
PG					01	04	05
Part Time Teachers							
Ph.D.	01	--	01	--	--	--	--
M.Phil.	--	--	--	--	01	--	--

2.4.4 What percentage of the teachers has completed UGC-CSIR NET,UGC-NET, and SLET exams? In that what percentage of are with PG as highest qualification?

Net SET qualifications are required only for faculty of Basic Sciences, Humanities and Mathematics. One teacher teaching Chemistry subject is PhD qualified. The faculty members from other departments are having PG (i.e. M.E./M. Tech./MSc) qualification.

2.4.5 Does the College encourage diversity in its faculty recruitment? Provide the following departments-wise details.

Yes, the College encourages diversity by recruiting faculty from all the places of the state and all over the country. All faculty members from Physics, Chemistry, and Mathematics and English departments are the product of other colleges. 70-80% faculty members of three engineering departments are the product of this institute. Some of the faculty members have completed their PG/Ph.D. from Indian Institute of Technology, Indian Institute of Science and the institutes outside the state. Following table indicates the diversity in faculty positions in terms of product of this college, product from other college within the state and product from states other than Maharashtra. Currently there is not a single faculty from abroad.

Table 2.14: Diversity in Faculty Positions

Department	% of faculty who are product of			
	The same College	Other colleges within State	From other States	From abroad
Civil Engg.	02			
Mechanical Engg.	01			
Electrical Engg.	01			

2.4.6 Does the College have the required number of qualified and competent teachers to handle all the courses for all departments? If not, how do you cope with the requirements? How many faculty members were appointed during last four years?

Yes, the College has the required number of qualified and competent teachers to handle all the courses. The experienced retired Professors and Associate Professors are appointed on contract and visiting basis in order to meet the additional teaching load for various Post Graduate programmes. The institute plans to recruit faculty every year subject to approval of advertisement from University & DTE.

2.4.7 How many visiting Professors are on the roll of the College

There are few visiting professors on rolls of the college. Besides this, eminent and experienced Professors from the reputed institutes like IITs are being regularly invited for delivering expert lectures by various departments

2.4.8 What policies/systems are in place to recharge teachers?(eg: providing research grants, study leave, nomination to national/ international conferences/Seminars, in- service training, organizing national/ international conferences etc.)

The College extends its support in all aspects to improve the quality of the faculty. The faculty is encouraged to participate in training programmes /workshops/ seminars/conferences/FDPs to update knowledge and develop professional skills.

*Research grants:

Table 2.15 Research grants received by SPCE 2012-13, 2015-16

No.	Title of Modorob/RPS proposal	Name of faculty	Year	Amount sanctioned
1	Modernization & Removal of obsolescence (MODROB)of thermal engineering laboratory	Dr. R. S. Maurya	2012 - 13	15,00,000/-
2	Modeling product development for medical device manufacturing industries	Dr. Santosh Rane	2013 - 14	4,25,000/-
3	Identifying interactions among barriers in portfolio Management	Dr. Santosh Rane, Sachin Vankar	2013 - 14	25,000
4	“Design and Development of Three Axis Flexural Stages for Micro-Milling Workstation”.	Dr.Kiran Bhole	2015-16	20 Lakhs

The College Management encourages the faculty to apply in order to get research grants from funding agencies like AICTE, UGC, and DST.

***Study Leave:**

Based on the requirements of the individual Departments and the recommendations of the Head of the institution, BOG & DTE can grant Study Leave to staff members for higher studies.

***Nomination to National/International conferences/Seminars:**

The College encourages the faculty to attend National /International conferences /Seminars by providing financial assistance and special leave.

***In-service training:**

The College organizes various Faculty Development Programmes for newly appointed teachers and also encourages faculty to attend training programmes conducted at various institutions/industries to enrich their knowledge.

Organizing National / International conferences:

The College encourages all the Departments to organize conferences / seminars /workshops / exhibitions. Besides above strategies, following policies are used by the institute to recharge the faculty.

- ✓ Arranging FDPs for all faculty members every year which can promote skill up gradation and keep them informed about the effective modern teaching-learning methodologies.
- ✓ Encouraging industry interaction to get acquainted with the latest industry practices and industry problems for tackling through projects and dissertations.
- ✓ Encouraging faculty to publish and present papers.
- ✓ Providing necessary infrastructure to upgrade knowledge and/or skills.
- ✓ Allowing faculty members to pursue PG/ PhD under Quality improvement Programme (QIP).
- ✓ Giving incentives for additional work carried out or services provided in the form of testing and consultancy.

2.4.9 Give the number of faculty who received awards/recognitions for excellence in teaching at the state, national and international level during the last four years.

- Dr.Umale from Mechanical engineering department received, Best Technical Paper Award by the Institute of Indian Foundry Men – September 2015
- Dr.Kinhekar from Electrical engineering department received best POSOKO Award
- Dr.Nilesh Raykar received the best PhD thesis award from Monash University, Australia.

2.4.10 Provide the number of faculty who has undergone staff development programmes during the last four years. (Add any other programme if necessary)

Table 2.16: Faculty Participation in FDP

Academic Staff Development Programmes	Number of Faculty
Refresher courses	14+2+
HRD programmes	10+1+
Orientation programmes	0+12+
Staff training conducted by the College	8+04+
Staff training conducted by University/other colleges	14+05+
Summer / Winter schools, workshops, etc	5+03+

2.4.11 What percentage of the faculty have

***been invited as resource persons in Workshops/Seminars/Conferences organized by external professional agencies**

Table 2.17: Number of Faculty as Resource Persons

Department	Percentage of Faculty
Mechanical Engineering	50%
Electrical Engineering	6.25%
Civil Engineering	25%

***Participated in external Workshops / Seminars / Conferences recognized by national/ international professional bodies**

Table 2.18: Faculty participation in External Events

Department	Percentage of Faculty
Mechanical Engineering	100%
Electrical Engineering	93.75%
Civil Engineering	95%

Table 2.19 Faculty Publication

Department	% of Faculty
Mechanical Engineering	42.86
Electrical Engineering	37.5%
Civil Engineering	55%

***Teaching experience in other universities / national institutions and others**

Table 2.20 Teaching Experience

Department	Percentage of Faculty
Mechanical Engineering	14.29
Electrical Engineering	Nil
Civil Engineering	7.5%

***Industrial engagement**

Table 2.21 : Industrial Engagement

Department	Percentage of Faculty
Mechanical Engineering	100%
Electrical Engineering	12.5%
Civil Engineering	80%

*** International experience in teaching**

Faculty Members are yet to teach at the international level.

2.4.12 How often does the College organize academic development programmers for its faculty, leading to enrichment of teaching-learning process?

The College organizes regularly academic development programmes for its faculty, leading to enrichment of teaching-learning process. Faculty is also encouraged to attend such programs at the other institutes.

Curricular Development

- ✓ Curricular Development and academics is monitored Departmental Advisory Board (DAB) by the Subject Board (SB), and Academic Board (AB). The frequency of meeting is minimum one per semester for the former two committees while minimum one per year for the Academic Board.
- ✓ The Management of the institute also encourages Faculty Development Programmes by providing financial assistance.

* Teaching-learning Methods

- ✓ Faculty members make use of different methods to ensure effective Teaching – Learning activities. The lecture method constitutes a major part of the teaching exercise. Additional lectures are conducted as the students are from rural area and also for slow learners. However every teacher incorporates time tested teaching practices which make the classes more effective, interesting and student-centric.
- ✓ All faculty members maintain their respective course files that includes the course objectives & outcomes, syllabus including prescribed and reference text books, lesson plan, previous question papers, assignments, lecture notes etc. These are uploaded on Moodle so that students can have access to this.
- ✓ Faculty members extensively use modern teaching aids such as LCDs, Interactive Board, Internet, and Power Point etc., for all courses.
- ✓ Field trips to industries, exhibitions etc., so as to update the skills of faculty as well as the students.
- ✓ The College motivates the Departments to organize Faculty Development Programmes /Workshops/Seminars/Conferences on a regular basis where the faculty can upgrade their intra-personal as well as inter personal skills.
- ✓ The Institute conducts Induction Training Programmes for the newly recruited \ faculty once in a year (in the beginning of first semester of an academic year) to orient them to the institute philosophy and Practices.

Examination Reforms

The examination of SPCE functions as per the directions issued by academic board and departments. The academic board decides the academic schemes for the every UG and PG programs. According to the scheme of evaluation mentioned in the syllabus, the examination section conducts the examination of all the programs. For conducting the examination, committee is formed which consist of Chairman of exam section, Controller of exam, and Department exam controller and University nominee. Any reforms in conducting the examination is discussed by the examination committee and then approved. There has been significant reforms in examination system since autonomy is given. Followings are the important features of the examination systems regarding conduct of the examination.

- Exam section prepares the calendar for the entire academic year and publish it on the website at the start of the academic year. This enables every stakeholders to plan their activities.
- With an aim to have continuous evaluation of the student, two in-semester examinations (Test-1 and Test- 2), each of 20 marks is conducted during semester.

- At the end of the semester, end semester examination of 100 marks is conducted which is scaled to 60 marks for the final grading.
- Assessed answer books are shown to the each students of every in semester and end semester examination with synoptic. The grievance of the students is thus solved immediately. Any change of marks is brought to the notice of the head of the department with proper justification and then submitted to the examination section. This practice has brought clear transparency in the system.
- Grading is decided based on mixed absolute and relative grading system. This is to ensure minimum passing criteria and also relative in comparison to maximum marks scored by the students.
- Exam committee declares the results only after approval from the constituted committee. This result declaration committee consists of Chairman of exam section Principal, Vice Principal, Dean Academics, Head of the Departments, PG coordinators (for PG results), Controller of exam, and Department exam controller.
- To avoid duplication of the grade sheets various security features are introduced in the grade sheets.

* Content / knowledge management

- ✓ Institute has hosted MOODLE on the intranet server. Faculty share their ideas & knowledge from the various forums available on the MOODLE Platform.
- ✓ Institute is using DSPACE for management of the documents & contents which is available to all the faculties centrally

2.4.13 What are the teaching innovations made during the last five years? How are innovations rewarded?

During past five years, the faculty members have modified teaching plans by adapting to new teaching tools like interactive white boards, LCDs, ppts, Moodle platform etc. The entire teaching learning methodology has been oriented towards outcome based education (OBE) philosophy with every faculty focusing on their respective course outcomes and program outcomes.

Few of the highlighting points are:

- ✓ Lesson Plans are prepared by the teachers at the beginning of the semester and the students are informed about plan.
- ✓ Think Pair Share (TPS) methodology has been recently introduced so as to have interactive teaching learning.
- ✓ Number of faculty members has made their course material in the form of ppts and related e_learning material available on Moodle site which can be accessed by the

students of respective class. This helps slow learners to study a topic at their own pace.

- ✓ Few faculty members have recorded their classroom lectures and are made available to students.
- ✓ Some of the faculty members have their own websites. The learning material, video lectures are made available to students on those website.
- ✓ NPTEL video lectures are being used by faculty members and students through which they get exposure to domain expertise of IIT faculty.
- ✓ Heads of the departments periodically monitor lectures and practical sessions and suggest corrective measures and point out deviations, if any, for improvement.

2.4.14 Does the College have a mechanism to encourage Mobility of faculty between institutions for teaching?

The institute has signed MoUs with three institutes viz. College of Engineering Pune, Walchand College of Engineering, Sangli and SGGS Institute of Engineering and Technology, Nanded for mobility of student/faculty. The institute invites the faculty from these institutes for sharing their teaching experiences. The management/Director encourage faculty to share their expertise with other institutions.

2.5 Evaluation Process and Reforms

***Faculty exchange programmes with national and International bodies?**

There is no faculty exchange programme with national and international bodies currently

2.5.1 How does the College ensure that all the stakeholders are aware of the evaluation processes that are operative?

The changes in the evaluation process those are planned and proposed to be affected from the subsequent semester are discussed and debated first in the department faculty meetings. The tentative decisions taken in IDC meeting regarding any academic and evaluation reforms are presented to the Academic Board (AB) for their approval. Finally these decisions in the form of Rules and Regulations (RRs) are tabled in the meeting of Academic Board & BOG for final ratification. Thus all stake holders are consulted and their opinion is sought before any changes are affected. RRs applicable for any current academic year are made available to all stake holders on college website while for students (who are the major stake holders), such prevailing information is given in the form of circulars and notices displayed at prominent places in various departments, library and examination cell.

2.5.2 What are the major evaluation reforms initiated by the College and to what extent have they been implemented in the College? Cite a few examples which have positively impacted the evaluation management system?

The institute received autonomy in 2010. Prior to Autonomy, SPCE followed examination system prescribed by University of Mumbai. Hence according to the university system of those times, the evaluation of the students was relied only on End-Term examination conducted in a conventional written paper form. Further, evaluation was done centrally and results were declared by the University.

With autonomy in 2010, SPCE implemented continuous evaluation and grading system throughout the semester. The system was devised and implemented benchmarking well known autonomous institutes of the country like IIT Bombay, PSG Coimbatore and so on. In all the reforms made, the central focus was to ensure quality standards and encouraging continuous learning and evaluation. The examination pattern and the changes implemented from time to time since autonomy are given below:

Examination Pattern:

A) Academic year 2010-11 and 2011-12:

In these academic years the courses consist of combine theory and its allied laboratory/practical work. The evaluation scheme for the course was as follows

o Theory Courses

- In Semester Evaluation of 20 Marks with weightage of 20% (Test 1 and 2 were conducted during semester, however the best marks out of the two test were only considered for weightage of 20%)
- End Semester Examination of 100 marks with weightage of 80%

o Laboratory Courses (Merged with allied theory course)

- The evaluation of laboratory work was done based on continuous evaluation scheme. The performance of students on experiment, assignments, seminar and presentations are the key components for the evaluation of the laboratory/practical work.
- Minimum 40% marks of combine theory and practical marks was the criterion for passing the particular course.

B) Academic years 2012-13, 2013-14:

To strengthen continuous learning and evaluation the following evaluation scheme was implemented:

o Theory Courses

- In semester Examination-I of 20 marks with weightage of 20%
- In semester Examination-II of 20 marks with weightage of 20 %
- End Semester Examination of 100 marks with weightage of 60%
- Minimum 35% and 45% marks for passing in end semester examination was made compulsory for UG and PG courses respectively.
- Supplementary exam of 100 marks but only for theory part of the subject is introduced from the academic year 2012-13.

o Laboratory Courses

- The evaluation of laboratory work was done based on continuous evaluation scheme. The performance of students on experiment, assignments, seminar and presentations are the key components for the evaluation of the laboratory/practical work.
- Minimum 40% marks of combine theory and practical marks was the criterion for passing the particular course.

C) Academic year 2014-15:

Based on the inputs from mentors for curriculum revamping, the examination pattern was as follows:

o Theory Courses

- In semester Examination-I of 20 marks with weightage of 20%
- In semester Examination-II of 20 marks with weightage of 20 %
- End Semester Examination of 100 marks with weightage of 60%
- Minimum 40% and 50% marks for passing in end semester examination is compulsory for UG and PG courses respectively for the batch of students admitted in academic year 2014-15.
- Reexamination of 100 marks but only for theory part of the subject is to be conducted after declaration of end semester examination and remedial coaching to failed students.
- If candidate is present for T1 and T2 examination and absent in regular end examination then T1 and T2 marks of the student shall be considered and be added in reexamination.

o Laboratory Courses

- The evaluation of laboratory work was done based on continuous evaluation scheme. The performance of students on experiment, assignments, seminar and presentations are the key components for the evaluation of the laboratory/practical work.
- Minimum 40% marks of total marks are mandatory in each theory and practical/laboratory components of the course.

Further following reforms are introduced for quality improvement and transparent evaluation scheme

- The answer sheets of the in semester test and end semester examination were to be shown to the students
- Ordinance 5045 related to condonation was discarded (ordinance 5045 ---The 1% of the aggregate marks of the semester examination or 10% of the total marks of the course can be given to a candidate who fails only in one head of passing).

In the year 2014 SPCE's first Autonomous Batch rolled out with degree.

D) Academic year 2015-16:

From the academic year 2015-16, the theory and practical course were made separate as per recommendations received from the academic board. Following is the examination pattern from the academic year 2015-16:

o Theory Courses

- In semester Examination-I of 20 marks with weightage of 20%
- In semester Examination-II of 20 marks with weightage of 20 %
- End Semester Examination of 100 marks with weightage of 60%
- Minimum 40% and 50% marks for passing in end semester examination is compulsory for UG and PG courses respectively for the batch of students.
- Makeup test exam at department level one week before end semester exam is introduced for the students who are absent for the in semester examination with valid reason. Further it is proposed to have complete syllabus in such make up examination.
- Reexamination of 100 marks but only for theory part of the subject is to be conducted after declaration of end semester examination and remedial coaching to failed students.

o Laboratory Courses

- Laboratory course is considered as a separate passing head from the academic year 2015-16.
- The evaluation of laboratory work was done based on continuous evaluation scheme.
- The performance of students on experiment, assignments, seminar and presentations are the key components for the evaluation of the laboratory/practical work.
- Minimum 40% marks of total marks are needed to pass the laboratory/ practical course.

Further for end semester examination the external examiners question paper set is invited along with internal examiners question paper.

Examination section also has framed the examination guidelines for all stakeholders of the process.

E) Academic year 2016-17:

Following is the examination pattern from the academic year 2016-17:

o Theory Courses

- In semester Examination-I of 20 marks with weightage of 20%
- In semester Examination-II of 20 marks with weightage of 20 %
- End Semester Examination of 100 marks with weightage of 60%
- Minimum 40% and 50% marks for passing in end semester examination is compulsory for UG and PG courses respectively for the batch of students.
- Makeup test exam at department level one week before end semester exam for the students who are absent for the in semester examination with valid reason. Further complete syllabus is to be considered in such make up examination.
- Reexamination of 100 marks but only for theory part of the subject is to be conducted after declaration of end semester examination and remedial coaching to failed students.
- If candidate is present for T1 and T2 examination and absent in regular end examination then T1 and T2 marks of the student shall be considered and be added in reexamination.

o Laboratory Courses

- Laboratory course is considered as a separate passing head from the academic year 2015-16.
- The evaluation of laboratory work was done based on continuous evaluation scheme. The performance of students on experiment, assignments, seminar and presentations are the key components for the evaluation of the laboratory/practical work.
- Minimum 40% marks of total marks are needed to pass the laboratory/ practical course.

Value added courses

- Value added course is added (with 1 credit) for the students of UG program in Electrical Engineering.
- Value added course is added with no credit for the students of UG program in Mechanical engineering.

Further following reforms are made in the examination section

- Added more security features in the grade sheet
- Modification in the answer book (built in features such as graph papers, semilog papers with increase in pages of answer books to avoid handling of stationery)
- Online gateway for submission of the examination fees is proposed
- Separate exam calendar for faculty for quick review on exam activities
- Audit of the examination process for continuous improvements

2.5.3 What measures have been taken by the institution for continuous evaluation of students and ensuring their progress and improved performance?

The weightage for continuous evaluation in examination pattern and the changes implemented from time to time are mentioned above. As is evident from above, the reforms as far as continuous evaluation of students is concerned have taken place since autonomy (i.e. from 2010).

Based on the inputs from mentors for curriculum revamping, the continuous evaluation pattern was changed to in following manner

- Test1 (T1) - 20% weightage
- Test1 (T2) - 20% weightage
- End Semester - 60% weightage

Teacher's also choice to evaluate the students through Declared Test, Make up Test, Quiz, Seminars, Group Discussions, Assignments and Presentations etc. ensuring continuous evaluation of students and their progress throughout the semester.

2.5.4 What percentage of marks is earmarked for continuous internal assessment? Indicate the mechanisms strategized to ensure rigor of the internal assessment process?

The percentage of continuous evaluation through In Semester Evaluation by using any of the assessment tools (Declared Tests, Make up Tests, Quizzes, Seminars, Group Discussions, Assignments and Presentations, attendance, termwork, oral etc.) has been 30%, 10% and 10%.

All assessment tools are rigorously deployed by all faculty members. The details about schedule, plan and evaluation method is informed to the students at the beginning of the semester by course faculty. The assessed answer books and tutorials while grades obtained for rubric assessment, are shown to the students.

2.5.5 Does the College adhere to the declared examination schedules? If not, what measures have been taken to address the delay?

Yes, the college strictly adheres to the declared examination schedules and academic calendar. There had not been, so far, any deviation from the declared schedule for examinations. However if any deviation or delay is anticipated or arises unexpectedly few gaps /holidays/two to three additional days are included in schedule itself as per academic calendar.

2.5.6 What is the average time taken by the College for declaration of examination results? Indicate the mode / media adopted by the College for the publication of examination results e.g., website, SMS, email, etc.

The average time taken by the College for declaration of results is ten days after the last day of examination. In case of VIIIth Semester of UG, the results are declared within a week after the last day of examination. The examination results are published on college website, Notice Boards and the copies of ledgers containing the details are maintained with examination office. The grade cards of individual student are distributed to the students by the Examination.

2.5.7 Does the college have an integrated examination platform for the following processes?

Yes. The college has an integrated examination platform i.e. Examination office. Test -1 (T1), Test -2 (T2) & End Semester examinations are conducted centrally by Examination Cell.

***Pre-examination processes – Time table generation, OMR, student list generation, invigilators, squads, attendance sheet, online payment gateway, etc.**

Data related to registration for theory and laboratory courses is made available to staff at exam cell for generating student list for each of course examination. The question paper setting along-with its analysis is carried out by each course teacher for submitting to Exam Cell. This is coordinated by Department Exam Coordinator (DEC). The seating arrangement for various examinations, Examination Schedule and allotment of invigilation duty to faculty members is done by exam section. Attendance records and invigilation reports are printed and kept ready along with answer-books. The exam hall tickets for students are distributed to the students in advance mentioning the schedule of all the examinations (In Semester & End Semester)

***Examination process –Examination material management, logistics.**

The Question paper copies for various theory courses sealed in large envelopes are stored in strong room at exam section. Blank answer-books are also stored in strong room. These are taken to examination halls along-with attendance record sheet and invigilation reports on the day of examination. Written answer-books after the examination are collected by invigilators for submitting to DEC along-with attendance record sheet and invigilation reports. These answer-books and records are stored at exam section.

***Post examination process – attendance capture, OMR based exam result, auto processing, generic result processing and certification.**

Assessment of answer-books by faculty is carried out centrally at exam section. Scrutiny for assessed answer-books is done at exam cell so as to avoid mistakes. Marks are entered question-wise for processing and also to compute attainment of course outcomes. Grades allotted are reviewed. Examination Committee (EC) reviews and approves the grades and results before declaration or publishing. The constitution of EC is as follows:

Table 2.22: Constitution of Examination Committee

Sr. No	Name of the Staff	Designation
1	Chairman	Head of the Institution
2	Member Secretary	Controller of Examinations
3	Member	University Representative (University of Mumbai)
4	Member	Department Controller (Civil)
5	Member	Department Controller (Mechanical)
6	Member	Department Controller (Electrical)
7	Member	Internal Evaluator
8	Member	External Evaluator

2.5.8 Has the College introduced any reforms in its Ph.D. evaluation process?

Ph. D. evaluation process is carried out as per the rules/norms and regulations of Mumbai University and UGC- New Delhi. Presubmission seminar/presentation by the student on his research work has been introduced by the college in the evaluation process.

2.5.9 What efforts are made by the College to streamline the operations at the Office of the Controller of Examinations? Mention any significant efforts which have improved process and functioning of the examination division/section?

Examination cell has been housed in a separate building. The civil infrastructure of the Examination Cell consists of Strong room, Office cabin for controller of examination, assessment hall for assessing answer-books and working space for supporting staff. Conventional and Wi-Fi net connectivity, adequate number of computer systems and printers as well as a photocopying machine have been provided to Exam Cell for proper and efficient functioning of the examination cell. Necessary and sufficient manpower is employed for processing pre-examination, during examination and post-examination work and tasks. Details are as given below:

Table 2.23 : Manpower for Exam. Cell

Office/Staff	Eligibility	Number
Office Superintendent	Master Degree in any Stream, MS-CIT, tally 9 Advanced Excel	1
Accountant	M.Com, Tally ERP 9, Advanced Excel	1
Data Entry Operator	Bachelor's/ Maters Degree in any stream, MS-CIT, Advanced Excel	3
Peon	HSC	3

Automation in various exam cell activities has been implemented for simplified operations and improving the functioning of the examination cell considerably.

2.5.10 What is the mechanism for redressal of grievances with reference to evaluation?

In case of the examinations for all theory courses, the evaluated answer-books are shown to individual student. The corrections/queries raised by students are addressed by the theory course-teacher. The genuine and legitimate changes or corrections are effected by course-teacher before entering marks in the mark-list. Copy cases or other queries are referred to redressal committee.

2.6 Student Performance and Learning Outcomes

2.6.1 Whether the College has clearly stated learning outcomes for its programmes? If yes, give details on how the students and staff are made aware of these?

Yes, the College has clearly stated the learning outcomes for its programmes. Program Educational Objectives- **PEOs** and learning outcomes (in term of Program Outcomes- **POs** for each program

PEOs define the capabilities, the graduates of the institute are expected to achieve over a period of four years of their graduation while the POs define the capabilities the students of a program are expected to achieve at the time of graduation. These are in line with the Graduate Attributes presented through Washington Accord and are accepted by National Board of Accreditation, India. Since POs are met through the attainment of course outcomes (COs) of various courses of curriculum, COs for all courses are also defined.

Since PEOs describe the career and qualification accomplishment of the graduates, the statements are common to all the programs. These statements give emphasis on knowledge, skill and attitude.

Program outcomes, though in line with Graduate Attributes, vary slightly from program to program. The POs of UG program of Mechanical Engineering are presented below as an example.

“A student of UG program of Mechanical Engineering of Sardar Patel College of Engineering, Mumbai at the time of graduation will be able to:

- a. An ability to apply knowledge of mathematics, science and mechanical engineering.
- b. An ability to identify, formulate, solve and draw appropriate conclusions of complex mechanical engineering problems.
- c. An ability to design and develop a system or process to meet desired needs with appropriate considerations such as economic, environmental, social, ethical, manufacturability, sustainability, health, safety, legal and cultural.

- d. An ability to design and conduct experiments with given constraints analyse and interpret data for complex engineering problems having multiple possible solutions.
- e. An ability to use the techniques, skills and modern engineering tools such as CAD, analysis and simulation tools necessary for engineering practice.
- f. Responsiveness towards professionalism and ethics.
- g. An ability to function on multi-disciplinary teams
- h. An ability to communicate effectively.
- i. An ability to demonstrate the knowledge of engineering and management principles and apply these to manage the projects and its financial aspects.
- j. An ability to engage in lifelong learning.

PEOs, POs and COs are made available to respective stakeholders by following means. The POs and COs are reviewed in the meetings of Board of Studies and

Departmental Advisory Board at the beginning of every academic year.

- ✓ The faculty explains the outcomes expected from the students in the orientation classes / beginning lecture of every semester.
- ✓ The syllabus file uploaded on Moodle, which is accessible to students, contains these Course Outcomes for each of the courses of the program.
- ✓ The outcomes expected from the students for the programme are displayed at prominent places in the department.
- ✓ Both PEOs and POs are displayed on college website.

2.6.2 How does the institution monitor and ensure the achievement of learning outcomes?

The learning outcomes (POs) spell about the capabilities of graduating student in terms of knowledge, skill and attitude. The statements for POs given in Section 2.6.1 indicate that the first five POs (a to e) represent the capabilities in terms of cognitive levels of Bloom's taxonomy which deal with knowledge part while POs (f to j) represent the capabilities in terms of skills which deal with psychomotor domain of Bloom's taxonomy. The POs related with ethical behavior, concern to environment and lifelong learning (viz. e, g and k) deal with attitude part of the student and hence depict the affective domain of Bloom's taxonomy.

The knowledge related POs are attained by the students through the courses of four years of graduation study and are assessed through direct assessment tools viz. examinations, assignments, tutorials quiz, etc. as well as indirect assessment tools like Course Exit Survey and Graduate Exit Survey.

The skill related POs like team spirit, communication skills (both oral and written, use of modern tools etc) are attained by the students through direct assessment tools like laboratory sessions, laboratory examinations, mini projects, projects, seminars, presentations & co-curricular and extra-curricular activities. Since attainment of skills cannot be quantified directly, rubrics are developed with appropriate performance criteria by the institute to assess the students when they work in laboratories, give presentations on their projects, submit written reports on any academic activity and participate in co-curricular and extra-curricular activities. These are also assessed through Graduate Exit Survey.

The attitude related POs are assessed through participation of the student in societal work carried out by the student (e), observation on his overall behavior and response(g) and independently executed tasks (k). These are also assessed through Graduate Exit Survey.

All direct and indirect assessment tools are rigorously used by all faculty members of all programs throughout the semester. The attainment of course outcomes is computed by all faculty members for their respective courses through direct assessment tools with weightage of 80% and Course Exit Survey with weightage of 20%. The Program Coordinator of each program collects this information from Coordinators and implements following policy to compute attainment of Program Outcomes as mapped to Graduate Attribute. The policy for computation of Program Outcomes from various assessment tools (for UG program of Electronics Engineering as an example) is as shown in the following table.

Table 2.24: Policy for Computation for PO Attainment

GA	GA Description	PO Mapped	Direct Tools		Indirect Tools		
			End Sem Exam	Rubric	CES	GES	SPF
1	Engineering Knowledge						
2	Problem Analysis						
3	Design/Development of Solutions						
4	Complex problems investigations						
5	Modern Tool Usage						
6	The Engineer and Society						
7	Environment and Sustainability						
8	Ethics						
9	Individual and Team Work:						
10	Communication						
11	Project mgmt and Finance						
12	Life long learning						

The bitwise details regarding efforts taken by faculty and institute to ensure the attainment of POs are as follows:

- ✓ Proper care is taken during the preparation of lecture plan, the discussion in the classroom, question paper setting, conduct of Midsemester & End-Semester examinations and the evaluation process, that student attains the defined outcomes.
- ✓ Regular assignments, quiz, seminar, declared tests and surprise tests are conducted to monitor the progress of the student.
- ✓ Mentorship system is followed; the assigned faculty member monitors the performance of the students and maintains the record of the students on the Moodle.

- ✓ The College organizes co-curricular and extra-curricular activities to enrich the outcomes.
- ✓ The student learning outcomes in curricular activities is monitored by the teacher through student performance in the classroom during the lecture hours.
- ✓ The evaluated reports are discussed in the faculty meetings and appropriate measures are taken for improvement.
- ✓ Both internal and external academic audits are carried out during each semester so as to assess the attainment of the learning outcomes.

The attainment of POs for academic year 2013-14 by UG program in Mechanical Engineering (as an example) against expected attainment level for each PO for three consecutive academic years is graphically depicted below.

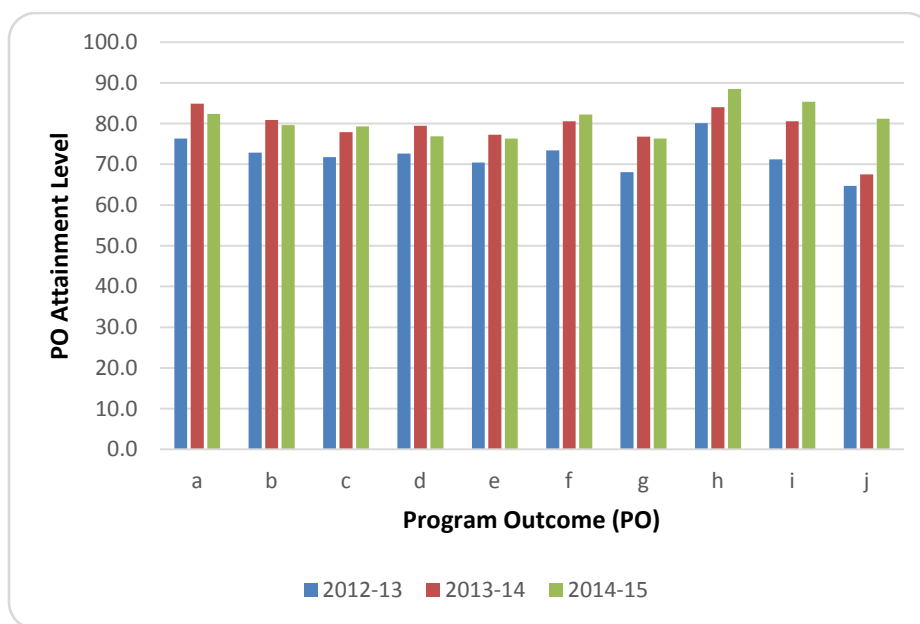


Figure 2.2 PO attainment (UG) – Mechanical Engineering

2.6.3 How does the institution collect and analyze data on student learning outcomes and use it for overcoming barriers of learning?

Details of the data collection required for computation of attainment POs are already presented in the Section 2.6.2 in detail. Few of the additional details are as follows:

- ✓ A course faculty collects the academic data of the students in the insemester as well as at the end semester examination.
- ✓ The attainment of program outcomes is monitored twice in a year. The academic audit is conducted once per semester by internal auditors while once per year by external auditors.
- ✓ The academic audit reports are discussed in the department meeting. Proper action

is planned with suggestions from SB/DAB to overcome the shortcomings mentioned in the report for the subsequent semester.

- ✓ If there is a discrepancy in the targeted and attained level of outcome as observed by individual faculty or mentioned in academic audit report, a critical analysis is carried out by each concerned faculty to find out the causes.
- ✓ Such findings are discussed in the department meeting and common causes for low attainment of outcomes are discussed.
- ✓ An appropriate action plan (e.g, conduct of remedial classes, addressing weak students, repeating the difficult topics, inviting guest lecturers etc.) with suggestions from SB/DAB to overcome the shortcomings mentioned in the report for the subsequent semester is scheduled and executed.
- ✓ A close monitoring is done for the implementation of the suggestions to finally crosscheck the improvement in the attainment.

2.6.4 Give Programme-wise details of the pass percentage and completion rate of students.

Table 2.25: Pass Percentage and Completion Rate (UG)

RESULT DETAILS (PASSING PERCENTAGE) FOR UNDER GRADUATE

PROGRAM	YEAR	CLASS	TOTAL NO.OF STUDENTS	NO. OF STUDENTS PASS	NO. OF STUDENTS FAIL	% OF PASSING
CIVIL	2012-2013	F.Y.B.TECH	64	48	16	75.00%
		S.Y.B.TECH	75	64	11	85.33%
		T.Y.B.TECH	81	52	29	64.20%
		B.TECH	75	72	3	96.00%
	2013-2014	F.Y.B.TECH	61	48	13	78.69%
		S.Y.B.TECH	77	66	11	85.71%
		T.Y.B.TECH	80	61	19	76.25%
		B.TECH	76	74	2	97.37%
	2014-2015	F.Y.B.TECH	64	40	24	62.50%
		S.Y.B.TECH	74	55	19	74.32%
		T.Y.B.TECH	77	61	16	79.22%
		B.TECH	80	73	7	91.25%
	2015-2016	F.Y.B.TECH	67	52	15	77.61%
		S.Y.B.TECH	79	54	25	68.35%
		T.Y.B.TECH	74	66	8	89.19%
		B.TECH	80	74	6	92.50%
MECHANICAL	2012-2013	F.Y.B.TECH	63	54	9	85.71%
		S.Y.B.TECH	75	65	10	86.67%
		T.Y.B.TECH	84	63	21	75.00%
		B.TECH	67	66	1	98.51%
	2013-2014	F.Y.B.TECH	58	50	8	86.21%
		S.Y.B.TECH	75	68	7	90.67%
		T.Y.B.TECH	74	70	4	94.59%

	2014-2015	B.TECH	79	77	2	97.47%
		F.Y.B.TECH	62	43	19	69.35%
		S.Y.B.TECH	72	54	18	75.00%
		T.Y.B.TECH	76	71	5	93.42%
		B.TECH	74	71	3	95.95%
	2015-2016	F.Y.B.TECH	67	52	15	77.61%
		S.Y.B.TECH	79	54	25	68.35%
		T.Y.B.TECH	74	66	8	89.19%
		B.TECH	80	74	6	92.50%
ELECTRICAL	2012-2013	F.Y.B.TECH	63	48	15	76.19%
		S.Y.B.TECH	75	67	8	89.33%
		T.Y.B.TECH	84	60	24	71.43%
		B.TECH	82	79	3	96.34%
	2013-2014	F.Y.B.TECH	62	53	9	85.48%
		S.Y.B.TECH	75	67	8	89.33%
		T.Y.B.TECH	76	58	18	76.32%
		B.TECH	81	76	5	93.83%
	2014-2015	F.Y.B.TECH	63	48	15	76.19%
		S.Y.B.TECH	75	59	16	78.67%
		T.Y.B.TECH	73	63	10	86.30%
		B.TECH	76	73	3	96.05%
	2015-2016	F.Y.B.TECH	59	49	10	83.05%
		S.Y.B.TECH	75	64	11	85.33%
		T.Y.B.TECH	76	68	8	89.47%
		B.TECH	72	71	1	98.61%

Table 2.26 RESULT DETAILS (PASSING PERCENTAGE) FOR POST GRADUATE

PROGRAM	YEAR	CLASS	TOTAL NO.OF STUDENTS	NO. OF STUDENTS PASS	NO. OF STUDENTS FAIL	% OF PASSING
CIVIL	2012-2013	M.TECH - CONSTRUCTION MANAGEMENT	18	15	3	83.33%
		M.TECH - STRUCTURAL ENGINEERING	18	14	4	77.78%
	2013-2014	M.TECH - CONSTRUCTION MANAGEMENT	18	18	0	100.00%
		M.TECH - STRUCTURAL ENGINEERING	18	16	2	88.89%
	2014-2015	M.TECH - CONSTRUCTION MANAGEMENT	17	17	0	100.00%
		M.TECH - STRUCTURAL ENGINEERING	18	15	3	83.33%
	2015-2016	M.TECH - CONSTRUCTION MANAGEMENT	18	16	2	88.89%
		M.TECH - STRUCTURAL ENGINEERING	18	15	3	83.33%
MECHANICAL	2012-2013	M.TECH - MACHINE DESIGN	15	11	4	73.33%
		M.TECH - THERMAL ENGINEERING	16	10	6	62.50%
	2013-2014	M.TECH - MACHINE DESIGN	18	13	5	72.22%
		M.TECH - THERMAL ENGINEERING	18	16	2	88.89%
	2014-2015	M.TECH - MACHINE DESIGN	18	13	5	72.22%
		M.TECH - THERMAL ENGINEERING	18	12	6	66.67%
	2015-2016	M.TECH - MACHINE DESIGN	16	13	3	81.25%
		M.TECH - THERMAL ENGINEERING	18	16	2	88.89%
ELECTRICAL	2014-2015	M.TECH – POWER ELECTRONICS & POWER SYSTEM	18	13	5	72.22%
	2015-2016	M.TECH – POWER ELECTRONICS & POWER SYSTEM	18	14	4	77.78%

CRITERION III:

RESEARCH, CONSULTANCY AND EXTENSION

3.1 Promotion of Research

3.1.1 Does the College have a research committee to monitor and address the issues of research? If yes, what is its composition? Mention a few recommendations which have been implemented and their impact.

Table 3.1 Research Committee

Sr.No	Portfolio	Designation
1	Chairman	Dean Research
2	Member Secretary	Associate Professor
3	Senior Research Advisor (Mech)	Senior Professor IIT
4	Senior Research Advisor (Civil)	Senior Professor IIT
5	Senior Research Advisor (Elect.)	Senior Professor IIT
6	Member	Associate Professor
7	Member	Associate Professor

Yes, the college has research committees to monitor the research activities at various levels. The progress seminars of Ph.D work are monitored by departmental research committee consisting of Head of Department (Chairman), Four experts (Two Professors and Two Associate Professors) from the respective department. The committee meets twice in a year to monitor the progress of the Ph.D work. Ph.D thesis prior to its submission is assessed by a committee consisting of Director, two internal experts, one external expert, Dean Academics, Dean R&D and Chairman of departmental programme committee. On the recommendations of the committee the thesis is forwarded to Mumbai University for further processing. The typical recommendations include additional works to be carried out to improve the quality of research, incorporation of elaborative discussions, appropriate conclusions based on the study conducted etc. The regular presentations before the research committee has improved the quality of Ph.D work which is evident in increased number of publications. The funded research projects from funding agencies such as AICTE, DST, DRDO, CSIR etc are monitored by a committee consisting of Director, Dean academics/Dean R&D, Head of respective department, one internal expert and one external expert. The committee meets once in a year. The progress and utilization reports are sent only after the satisfactory presentation of the work by the Principal Coordinator of the project to the committee members. The typical recommendations of the committee include modifications to experimental set-up, use of appropriate methodology, presentation of results, applications to societal needs, publishing the study in peer reviewed journal etc.

This has helped in timely submission of progress and utilization reports and thereby timely completion of the project with publication in peer reviewed journal.

3.1.2 What is the policy of the College to promote research culture in the College?

The policy of the college is to promote research and is evident in the Vision statement of the college. The research culture is promoted in many ways by the college at various levels. The undergraduate and post-graduate (in particular) students are encouraged to take up research oriented projects for UG project and PG dissertation. All the facilities necessary for conducting the research work are provided in terms of infrastructure, manpower and extended working hours. The students are financially supported to attend/participate in conferences and present their research work. The faculty are deputed to pursue their Ph.D programme through Quality Improvement Programme (QIP) with full pay. The faculty are also encouraged to register for Ph.D through external registrations in IITs and other universities. They are given study leave for completing their course work in IITs in case of external registrations. The facilities required for carrying out the research work are made available through various college funds. The faculty is further supported to apply for research grants to national and international agencies. A provision for seed money funding is made in Technical Education Quality Improvement Programme (TEQIP). Under this scheme of funding the faculty are provided with seed money to develop the experimental set-up and procure necessity components required for their work. The college has provision to provide travel grants to faculty to attend a national conference once in a year and international conference once in three years. In addition to this, the faculty is financially supported to organize/attend conferences/seminars/workshops/training programmes under TEQIP. Besides, the faculty are encouraged to publish their work in peer-reviewed journals. The financial support (if required) is provided to the faculty and students.

Apart from this institute had appointed three senior research advisors from IIT Mumbai who guides the B.Tech , Mtech & PhD students on Research, writing research proposals, regularly attending the progress seminars and giving their valuable inputs. Institute has appointed Dean R& D to look after research related issues. Research tools like SPSS & Minitab etc. are in place

The Civil Engineering department of college is been recognized as a minor centre for Ph.D programme under QIP by AICTE since 2014.

3.1.3 List details of prioritized research areas and the areas of expertise available with the College.

Table 3.2: List of Research Areas and Expertise Available in Respective Departments

Sr.No.	Research Areas	Areas of Expertise Available
1	Mechanical Engineering	<ul style="list-style-type: none">• Industrial Engineering• CAD/CAM/CAE• Refrigeration & Air Conditioning• Mechatronics• Thermal Engineering• Machine Design• CFD• Manufacturing etc.
2	Civil engineering	<ul style="list-style-type: none">• Transportation Engg.• Offshore Engg.• Structural Dynamic Earth Quake Engg.• Advanced Structural Analysis• Artificial Neural Networks• Concrete technology etc.
3	Electrical engineering	<ul style="list-style-type: none">• Power Electronic control in Renewable Energy• Power Electronic control of Electrical Machines & drives• Power Quality improvement• Smart Grid Systems• Modern Protection Systems• Control System etc.

3.1.4 What are the proactive mechanisms adopted by the College to facilitate smooth implementation of research schemes/ projects?

The college has its own system of implementing the research scheme/project. The principal investigator has full freedom to utilize the funding for the sanctioned purpose. The procurement of any equipment/instrument is through a methodical/systematic purchase procedure viz. quotations/tendering, comparative statements, recommendations of departmental purchase committee and approval by college level purchase committee. There is no delay in the procurement as purchase committee meetings are organized regularly. In case of shortage of funds, the college provides additional required funds with due approval from the original funding agency for

partial financial support to complete the project/scheme. All the projects either funded through college or external agencies are duly monitored by research committee for completion in time and are audited by auditors appointed by college and government (Regional office, Pune Department of Technical Education (DTE)). The utilization certificate upto the end of financial year is normally submitted in the month of April to the respective funding agencies. The college also has a mechanism for availing custom duty exemption. The proposals are scrutinized by a committee consisting of Principal, Dean Research, concerned HoD and an expert in the field of study and forwarded with recommendations to the University for further approval.

3.1.5 How is interdisciplinary research promoted?

***Between/among different departments of the College**

The curriculum has institute and departmental electives through which students are encouraged to choose projects of interdisciplinary nature. The students have access to faculty and all the facilities in other departments apart from their parent department. Some of the UG projects, PG dissertations are interdisciplinary. Presently two teams of Civil & Mechanical departments are working on interdisciplinary projects.

***Collaboration with national/international institutes / industries**

Internship is offered by the industry/organization and the students carry out projects in the eighth semester in industry/organization. Industry sponsored one full year PG dissertations are also encouraged to an extent of 40% of the student strength in that programme. Generally the industry projects are of interdisciplinary nature and thus promote interdisciplinary research. Various departments carry out activities in collaboration with other institutes/organizations viz. Mumbai, IITB, Mumbai, VJTI, Mumbai, VNIT, Nagpur, BARC, Tata Technologies, Larsen toubro, AKER Solutions etc. The nature of activities includes monitoring programmes, sharing of resources, and research fellowships. The college has Memorandum of understanding (MoU) with institutes of national repute to promote research culture.

Table 3.2 provides information on collaborative activities and its nature.

Table 3.3: Institute/Industry Collaboration and Nature of Activity

Sr.no	Name of collaborating institutes / industries	Nature of collaborative activity
1	Larsen & Toubro (L&T)	Industrial Visits, Exchange of Knowledge, internship training, continuing education programs
2	AKER Solutions	Industrial Visits, Exchange of Knowledge, internship training, continuing education programs
3	GODREJ & BOYCE	Industrial Projects, Knowledge sharing
4	D-ESPAT	Industrial Projects on DFMA
5	BADWE Engg.	Industrial Projects, Knowledge sharing
6	Christiani & Sharpline	Continuing education programs on PLC & Mechatronics
7	Emerson Climate Technologies	Exchange of expertise on Compressors etc
8	Wright State University, Ohio	Exchange of expertise of both
9	SGGSIE&T	Exchange of expertise of both
10	SVNIT	Exchange of expertise of both
11	RIT	Exchange of expertise of both
12	BOAT	To arrange Industry institute meets
13	Dr.DBATU, Lonere	Exchange of expertise of both

3.1.6 Enumerate the efforts of the College in attracting researchers of eminence to visit the campus and interact with teachers and students?

The college has taken lot of initiatives in terms of organizing seminars, workshops, conferences, and training programmes, in various departments. The academicians and professionals are invited for participating in these activities. ii. Expert lectures are organized by most of the course coordinators during the semester. The topics include contents which are beyond syllabus.

Table 3.4

A list of eminent researchers who visited this college and delivered the lectures is furnished in

Sr.no	Name of Eminent Researcher	Name of Organization
Mechanical Engineering	Dr.S.K.Maiti	IITB
	Dr. Prof. S. L. Dhingra	IITB
	Dr.M.C.Deo	IITB
	Dr.K.G.Narayankhedkar	Former VJTI Director
	Dr.B.M.Dabade	SGGSJET, Nanded
	Dr. R.P. Mohanty	Vice Chancellor, SOA University Orissa.
	Mr.Shrivastava	BARC

	Dr.Rajesh Patel	Spectra Physics, USA
	Dr.Rajesh Mote	IITB
	Mr.Mark	Singapore
Civil Engineering	Dr. Urmil Dave	Nirma University, Ahmedabad
	Dr Anand Khanna	IITB
	Mr. Mukul Dehadrai	Consultant
	Mr. T.P. Banerjee	Dr.Fixit
	Dr. T. P. Bandivadekar	Mukesh Patel institute
	Mr. Ujwal Uke	IAS Officer, Maharashtra Govt.
	Dr. Karunesh Saxena	Indore
	Mr. Mahesh Tandon	TCPL, New Delhi
	Mr. Aanad Pandey	CYSTR, New Delhi
	Mr. Mohan Jatkari	Gammon India
	Mr.S P KHEDKAR	Reliance
	Mr. Anand Desai	Gammon India
	Mr. Sandeep Pattiwar	Tangent Solutions, Mumbai
	Mr. Shashank Vaidya	GEM Engg. Services
	Mr. Manish Mokul	AFCONS
Electrical Engineering	Mr. Rane	L & T
	Mr. Deepak Ghosh	L & T
	Dr. Prashant Nawalkar	IIT-B
	Dr. Dandawate	VIIT-Pune
	Mr. Vijay Sonawane	MERC
	Dr. Bindu S	Fr Agnel Vashi
	Dr. Deepak Karia	SPIT
	Dr. H Mangalvedekar	VJTI
	Dr. Rathode	SPIT
	Ms. Medha Pandit	L & T

3.1.7 What percentage of faculty have utilized sabbatical leave for research activities? How has the provision contributed to the research quality and culture of the College?

The facility of availing sabbatical leave for research activities is being provided by the institute. Dr.P.Shrivastava had pursued his PDF at Ireland.

3.1.8 Provide details of National and International conferences organized by the College highlighting the names of eminent scientists/scholars who participated in these events.

The various departments in the college have organized conferences/training programmes. The list of programmes and eminent scientists/scholars participated in those events are given in Table 3.5

Table 3.5

Department	Name of Conference/FDP/Seminar	Eminent Scientist/Scholars attended
Mechanical Engineering	One week course on Piping Engineering	Mr. Sameer Deshpande, Mr. Pankaj Israni, Mr. Abhijeet A. Palsule, Mr. Yogesh R. Wadekar, Ms. Punam Kadwani from AKER POWER GAS LTD.
	One week course on Advanced Pressure Vessel Design & Analysis	S. Ravishankar, Amit Karambelkar, Sachin Khanderajuri from L&T Heavy Engineering & Fauzan Badiwale from Imagegrafix
	One week Course on DFMA	Mr.Syed Mubasheer Ali Director D-ESPAT,
	Two days workshop on CNC Programming	Mr. Yatin Mohire, GODREJ & BOYCE
	One week training cum workshop on Product Design Validation using Finite Element Analysis	Amit Nirmal, Nelson M., Sachin Shendge, Dr.Tansen Chaudhari-COO Fluid Controls Pune.
Civil Engineering	Two days workshop on “ Corrosion in RCC & Steel structures-Fundamentals, Assessments, Protection & Repairs Strategy” On 6 th and 7 th March 2014	Dr. Urmil Dave Dr Anand Khanna Mr. Mukul Dehadrai Mr. T.P. Banerjee Dr. T. P. Bandivadekar
	One week workshop on “ Inter Personal Skills & Management” 30 th June to 4 th July 2014	Mr. Ujwal Uke, Dr. Karunesh Saxena
	Workshop on Technical Aspects in Design and Construction of Bridges	Mr. Mahesh Tandon (TCPL) Mr. Aanad Pandey (CYSTRA) Mr. Mohan Jatkar Mr.S P KHEDKAR Mr. Anand Desai Mr. Sandeep Pattiwar Mr. Shashank Vaidya Mr. Manish Mokal Mr. Vivek Abyankar,

	half day course on power electronic	Mr. Rane L & T
Electrical Engineering	elective course of one semester on Industrial Automation	Mr. Deepak Ghosh L & T
	Two weeks course on Design Management Audit electrical systems	Dr. Prashant Nawalkar IIT-B
	one session on Image processing(cosine transformation)	Dr. Dandawate VIIT-Pune
	one week course on smart grid technology	Mr. Vijay Sonawane MERC
	one session on HVDC	Dr. Bindu S FrAgnel Vashi
	One semester course on Communication network and security	Dr. Deepak Karia SPIT
	course on electro-magnetics	Dr. H Mangalvedekar VJTI
	course on electronic communications	Dr. Rathode SPIT
	one session on electrical machines engineering	Ms Medha Pandit L & T

3.1.9 Details on the College initiative in transferring/advocating the relative findings of research of the College and elsewhere to the students and the community (lab to land).

The college has taken initiatives to implement many findings of research within campus and outside campus. The outputs from UG/PG dissertation and Ph.D work have been implemented. The details are presented in Table 3.5.

Table 3.6
Initiative (lab to land) in transferring your research to the students and the Community

Department	Labs	Research Work	Application/Implementation
Mechanical	CAD/CAM	3D Printer	For creating 3D Prototype of Models for teaching/learning process in class
	TOM	Pyrolysis	Implemented in college to convert plastic into usable petrol
	Mechatronics	PLC Model	Used for demonstration to students during practicals
		Nilesh, Rane	

	CAD/CAM	3D virtual tour of industry	For demonstration purpose to the students in class
Civil	Concrete Technology	Techno-Economic Evaluation of Reuse of Rainwater & Wastewater for Bharatiya Vidya Bhavan's Campus	To be Implemented in college
	Environment	Use of Kitchen Waste for Generation of Biogas Generation	To be Implemented in college
	Concrete Technology	Use of pervious concrete as storm water drain covers	To be Implemented in college
	Environment	Treatment of Sullage Water for Non-Potable Use using portable device	To be Implemented in college
	Environment	Use of solar electricity for Hostel Building of SPCE	To be Implemented in college
	Environment	Solid Waste Management for Bhavan's Campus	To be Implemented in college
Electrical Engineering	Power Electronics	Design and Calibration of sensing circuits	Injection of Reactive Power into Grid by Polar Voltage Control Technique for Wind Power Applications. Work completed.
		DSP TMS320F28335 Programming	
		Open loop implementation	
		Closed Loop implementation	Unsuccessful due to improper design of inductor.
		Design and Calibration of Sensing Circuits	Boost Factor Modulation of Z-source Inverter under Unbalanced Grid Condition.
		Back to back VSI Implementation	Work completed
		Test of Z-source inverter under balanced grid condition	Work completed
		Test of Z-source inverter under unbalanced grid condition	Work completed
		Improved torque response of Induction Motor using DTC applying fuzzy logic control.	Work completed
		SPV Array based BLDC Motor for Fans in Indian Railways using MPPT Algorithm.	Work completed

Table 3.7

Name of Faculty	No. of students guided		Research /Project Areas
	PG	PhD	
Mechanical Engineering			
Dr.R.B.Buktar	25	Nil	Industrial Engineering, CAD, CAM, Knowledge Base Engineering, Artificial Intelligence
Dr.S.B.Rane	20	06	Supply Chain Management, Industrial Engineering
Dr.S.S.Umale	18	Nil	Thermal Engineering, Metallurgy
Dr.R.S.Maurya	35	05	Thermal Engineering, Computational fluid Dynamics
Civil Engineering			
Dr. P. H. Sawant	25	04	Water Resources Engineering and Construction Management
Dr M M Murudi	44	04 in Progress	Structural Dynamics and Earthquake Engineering
Dr. P. P. Nagrale	15	01 Awarded 02 in Progress	Transportation Engineering
Dr. A. R. Kambekar	22	02 in Progress	Water Resources Engineering
Dr. A. A. Bage	36	03 in Progress	NDT, Concrete Structures, Rehabilitation of Structures.
Dr P. G. Gaikwad	10	Nil	Construction Management
Dr. Hansa Jeswani	02 08 (Co-guide)	Nil	Environmental Engineering
Dr. Anil Ghadge	07	Nil	Environmental Engineering Construction Management
Electrical Engineering			
Prof. B. B. Pimple	05	Nil	Power Electronics
Prof. Remadevi C.	01	Nil	Power System
Prof. Anupa Sabnis	01	Nil	DSP, Image Processing
Prof. Vidya Joshi	05	Nil	Electronic Circuits
Prof. N.W. Kinhekar	01	Nil	Power system, Smart Grid
Prof. S. Daingade	01	Nil	Control System
Prof. N. G. Bhitre	03	Nil	Control System
Prof. B. B. Pimple	05	Nil	Power Electronics

3.2 Resource Mobilization for Research

3.2.1 What percentage of the total budget is earmarked for research? Give details of major heads of expenditure, financial allocation and actual utilization for last four years.

40% of the total budget is earmarked for research. The major heads of expenditure, financial allocation and actual utilization is given in Table 3.7.

Table 3.8: Budget and Utilization Details

Item	Budgeted in 2014-15 (in Lakhs)	Expenses till June 14 (in Lakhs)	Expenses in 2013-14 (in Lakhs)	Expenses in 2012-13 (in Lakhs)	Expenses in 2011-12 (in Lakhs)
Infrastructure Built-up					
Library	24.60	16.78	32.33	13.91	8.36
Laboratory equipment(D RF, TEQIP)					
Laboratory consumables(Recurring)	5,31,80,000	70,27,955	1,26,32,724.15	17,65,474	---
Teaching and non-teaching staff salary					
R&D(RPS, BARC)	56,50,000	34,99,489	34,99,489	3030	---
Training and Travel(TEQIP Training)	73,30,000	31,05,645	28,93,369	7,51,055.56	---
Total					

3.2.2 What are the financial provisions made in the College budget for supporting student research projects?

There is a separate allocation viz. "Project and Paper Submission" for supporting student research projects. The students procure the components required for their experimentation work through this budget and also avail registration fees for attending conferences to present their work. In addition, student research projects are supported

under Department Project Fund and TEQIP. Industrial and study visits are also supported by the college.

3.2.3 Is there a provision in the institution to provide seed money to faculty for research? If so, what percentage of the faculty has received seed money in the last four years?

There is a provision for seed money for faculty under TEQIP. Around 20% of the faculty have availed the facility of seed fund under TEQIP in last four years. Students & faculty are encouraged to apply for patent.

3.2.4 Are there any special efforts made by the College to encourage faculty to file for patents? If so, provide details of patents filed and enumerate the sanctioned patents.

Table 3.9: List of Patents

Sr. No.	Name of faculty	Title of patent	Sanctioned/ In process
1	Prof. Anupa Sabnis	Method of Capturing a full 360 degree view using panoramic imaging systems	In Process IPA no.1867/MUM/2012 Filed on 27 th June 2012

3.2.5 Provide the following details of ongoing research projects:

The details of ongoing research projects are given in Table 3.9.

Table 3.10: Ongoing Research Projects

Sr.no	Title of the Research Project	Investigator	Grant Received
1	PFM Modeling of solder joint under Cyclic Loading	Prof.D.N.Jadhav	1,07,000/-
2	Optimization of Instrumentation Needle Valve based of flow coefficient & pressure temperature behavior using Numerical methods	Prof.D.N.Jadhav	1,95,000/-
3	Experimental Investigation to impact energy of polymer composite	Dr.N.R.Raykar	1,50,000/-
4	Development of Experimental setup for vibration study in Acaemia	Dr.N.R.Raykar	50,000/-

5	Experimental & Numerical Investigation of Thermal Saturation Phenomenon to improve the performance of Earth Air Heat Exchanger	Dr.R.S.Maurya	2,00,000/-
6	Design & development of Experimental setup for synthesis & Analysis of Growth of Interfacial Micro Fractals in Non Newtonian fluid.	Dr.Kiran Bhole &	1,88,500/-
7	Design & development of Sublimation drying based experimental setup to avoid stiction problems in post processing of arrayed microstructure.	Dr.Kiran Bhole & Dr.Rajesh Buktar	1,69,000/-
8	Solar Photovoltaic array based brushless DC motor for fans in Indian Railways using maximum power point tracking Algorithm.	Dr.B.B.Pimple	73,000/-
9	A novel microwave measurement for water salinity measurement	Dr.Rahul Dahatonde	50,000/-
10	Study of characteristics of ultra high performance concrete	Dr.Hansa Jeswani	50,000/-
11	Experimental Analysis of SFRC & CFRC to increase sustainability of structure	Dr.A.R.kambekar	51296/-
12	Design & Analysis of Solid Waste Plant	Dr.P.G.Gaikwad	2,06,890/-
13	Development of Portable device for water disinfection using silver	Dr.Hansa Jeswani	2.15,000/-
14	Transportation infrastructure vulnerability & risk mapping for metro cities of India	Prof. Reshma Raskar	2,25,000/-
15	Effect of electrode surface area to volume of anodic chamber on performance of microbial fuel cell	Dr.Anil Ghadge	2,32,000/-

3.2.6 How many departments of the College have been recognized for their research activities by national / international agencies (UGC-SAP, CAS, DST-FIST, DBT, ICSSR, ICHR, ICPR, etc.)and what is the quantum of assistance received? Mention any two significant outcomes or breakthrough due to such recognition.

All the three departments (Civil, Mechanical, Electrical) have been recognized by one or the other agencies. The recognizing agencies include SUK, AICTE, DST, DRDO, MPCB and BARC.

3.2.7 List details of completed research projects undertaken by the College faculty in the last four years and mention the details of grants received for such projects (funded by Industry/ National/International agencies).

The list of research projects completed is given in Table 3.10. Same as above data

3.3 Research Facilities

3.3.1 What efforts are made by the College to keep pace with the infrastructure requirements to facilitate Research? How and what strategies are evolved to meet the needs of researchers?

The college has undertaken and initiated many activities to procure equipment and refurbishment works in various departments. Faculty is encouraged to submit research proposals to funding agencies and project specific equipment have been procured in various departments. Refurbishment works are carried out to provide required space and environment for the conduct of research activities. A separate provision in budget is made for such activities. Library is added with latest edition of reference books, manuals, periodicals, encyclopedias, e-books and handbooks. National and international journals published by reputed organizations/publishers like ASCE, ASME, Springer, IEEE, and Elsevier. Laboratory and computer facilities are provided 24x7 for students and faculty. It is proposed to provide independent cubicle with a personal computer with internet connection of 40 Mbps internet bandwidth. Wi-Fi facility is available in many parts of college campus. The researchers are provided with the facility of access to DELNET and libraries of other reputed institutes like IIT.

3.3.2 Does the College have an information resource centre to cater to the needs of researchers? If yes, provide details on the facility.

Yes. Information resource centre exists in the central library to cater the need of researchers. The centre provides facility for Online Public Access Catalogue (OPAC), E-learning resources, Science Direct, Springer link, access to Engineering Library, Developing Library Network (DELNET) and huge open resources including world digital libraries. The research publications by the faculty and students are also available in the library. Any research paper/article is procured through DELNET facility. There is also a long term tie up with IIT Library.

3.3.3 Does the College provide residential facilities (with computer and internet facilities) for research scholars and faculty?

The college provides bachelor accommodation in campus for research scholars. However, residential facilities are provided to Principal, vice Principal & Hostel warden in campus.

3.3.4 Does the College have a specialized research centre/ workstation to address challenges of research programmes? If yes, give details.

The various departments have well-equipped laboratory facilities. The details of facility available are listed in Table 3.11

Table 3.11

Laboratory	Research facility Available
Department of Mechanical Engineering	
CAD/CAM LAB	CATIA
	SIMULIA
	DELMIA
	PLM
	MATLAB
	ANSYS
	CFD
THERMAL ENGINEERING LAB	Nozzle Performance Experimental Setup
	Compressed Air Based Reaction Turbine
	Fluidized Bed Combustion Demonstrator
	Bar Two-Stage Reciprocating Compressor
	Composite Wall Thermal Conductivity Setup
	Forced Convection Experimental Setup
	Emissivity Measurement Setup
	Double Pipe Counter And Parallel Flow Setup
	Transient Heat Conduction Setup
	Heat Pipe Demonstrator
	Pin Fin Experimental Setup

	Liquid Thermal Conductivity Experimental Setup
	Cut Models Of Multistage Impulse And Reaction Steam Turbine
	Data Logger
REFRIGERATION & AIR CONDITIONING	To find the actual coefficient of performance of refrigeration cycle test rig.
	To find the actual coefficient of performance of mechanical heat pump.
	Performance on mechanical heat pump and comparing actual vapour compression cycle with theoretical on p-h chart.
	Studying performance of cooling tower.
	Determining humidifying efficiency of cooling tower.
	Determining the actual coefficient of performance of air and water heat pump.
	To find the actual coefficient of performance of refrigeration cycle test rig.
	To find the actual coefficient of performance of mechanical heat pump.
THEORY OF MACHINES & VIBRATION LABORATORY	Verify experimental relation for Simple Pendulum
	Determine radius of gyration K of Compound Pendulum
	longitudinal vibration of helical spring
	Vibration of system having spring in series
	Undamped torsional vibration of single rotor shaft system
	Torsional vibration of a double rotor shaft system
	Undamped free vibration of equivalent spring mass system
	Study forced vibration of equivalent

	spring mass system
	Study damped torsional oscillation and determine damping coefficient
	Verify experimental relation for Simple Pendulum
	Determine radius of gyration K of Compound Pendulum
	Longitudinal vibration of helical spring
	Vibration of system having spring in series
Laboratory	Research facility Available
Department of Electrical Engineering	
MACHINES LABORATORY	To perform load test on DC Shunt Motor, 3 Phase Induction Motor.
	To study speed control of DC Shunt Motor, DC series motor
	To observe torque speed characteristic of Induction Motor by inserting different value starting resistances in rotor circuit.
	To perform open circuit and short circuit test on 3 Phase Transformer.
	To study parallel operation of two single phase transformer.
	To study the effect of supply voltage variation on torque speed characteristic of 3 Phase Induction Motor.
	Voltage Regulation of synchronous generator by EMF/MMF ,ZPF method and ASA method.
	Slip Test on salient pole synchronous generator
	VF-curves of synchronous motor
	Performance characteristics of single phase induction motor.
RENEWABLE ENERGY LABORATORY	Solar P-V grid tied training system.
	Solar concentrator training system.
	Solar Thermal training systems.

	Wind energy training system.
SWITCHGEAR LABORATORY	Biased differential protection kit
	Generator Protection Unit
	Impedence relay test kit
CONTROL SYSTEM LABORATORY	PLC
	PID controller
ELECTRONICS LABORATORY	GW Digital storage Scopes Model no.GDS-1052V
	Gw.DDS Function gene raptor Model No.SEG-1013
	Power supply Model no.SVL015002D
	power supply SVL030005D Dual power supply
MICROPROCESSOR/MICROCONTROLLER LABORATORY	Dynalog 8051 Microcontroller Kit
	Microelektonica 8051 Microcontroller kit
	Anshuman 8085 Microprocessor kit
INTEGRATED CIRCUITS LABORATORY	DC Power supply 3003
	DC Power supply 3204
	Function generator HM 5030
	CRO HM 203G
	Digital Multi-meter Mastek
COMMUNICATIONS LABORATORY	Communication Trainer Kits FM, PAM.PPM, PCM, etc
	Digital Storage Oscilloscope.
MEASUREMENT LABORATORY	Frequency meter.
	Thermo coupler
	Megger
	Static and digital energy meter
POWER ELECTRONICS LABORATORY	Power Analyser Yokogawa Make Digital Power Analyzer meter Model No. WT 343F C2/G5 Sr. No. C2QK-23Q30V with standard accessories.
	Yokogawa make digital scope i) model no.DL850E-F-HE ii)modelNo.701250 2#Sr.No.91PA30708/30709
	Tektronix make DSO with colour TBs 1052 13.
	i) CQ1Q562 ii) CQ1Q566

	ii) CQ1Q564
	4. D.C. Power Supply Tektronix make 0.32v/6 Aamp DC.
	Power Analy Yokogawa make Digital power anady meter Mod no.WT353F
	Current Probe
DRIVES AND CONTROL LABORATORY	Simulation of Electrical drive.
	Simulation of starting of DC motor (soft start) ,dynamic braking,plugging and regenerative braking of DC motor
	DC or AC Dynamic braking and plugging of 3 phase induction motor.
	Single phase full wave controlled DC motor drive.Chopper Drive.
	V/F control of Induction motor using PWM inverter.
	Measurement of moment of inertia by retardation test.
AVAILABLE SOFTWARE'S	MATLAB
	Lab view
	KeilPk 51-ED10 software c51,Professional developers kit,10 user classroom license
Civil Engineering	
Computer Lab	1. Arc GIS Software
	2. MSP Primavera
	3. Newton
	4. Civil CADD
	5. Sewer CADD
	6. Arc GIS Software
Hydraulics Engineering Lab	1. 10m hydraulic flume
	2. Hydraulic turbine testing
	3. Centrifugal test rig
	4. Wind Tunnel
Transportation Engineering Lab	1. ANSYS
	2. ABACUS
	3. HDM4
	4. Marshall Stability Tests App
	5. Skid Resistance Tester
	6. Pressure Contact Tube

	Apparatus
	7. Benkdman Beam
	8. HDM4
Environmental Engg. Lab.	1. UV-VIS Spectrophatameter
	2. Atomic Absorption Spectrophatameter
	3. COD Reactor
	4. Water GEMS. Storm Water GEMES. Sewer GEMS
	5. Laminar Flow Hood
	6. Electronic Balance (0.001g)
Geo Technical Engg. Lab	1. Triaxial Test Equipment
	2. Load Actuator
	3. Consolidation test setup
SURVEY LAB	1. Total Station
	2. Digital Level
	3. Auto Level
	4. Civil CADD withRoad 2008
Concrete Laboratory	1. Compression Testing Machines(3),
	2. Concrete Mixers(2),
	3. Mortar Mixer,
	4. Table Vibrators(2),
	5. Mortar vibrators(2),
	6. Core cutting and grinding machine,
	7. Cube,
	8. cylinder and Beam moulds for concrete and cube and briquette moulds for mortar,
	9. Sieve shaker,
	10. flow table, VB time machine,
	11. Vicat apparatus,
	12. Accelerated curing Tanks(2),
	13. Autoclave,
	14. RCPT Set-up,
	15. Heat of Hydration apparatus,
	16. Permeability set-up,
	17. Electronic weighing

Material Testing Laboratory	1. 40 T and 100T Universal Testing machines,
	2. Mechanical and Electronic extensometer,
	3. 50 T Loading frame, 30 T hydraulic jack,
	4. Load cells with indicators,
	5. Strain indicator with switching units for 30 channels, hand held strain indicator with 5 channels,
	6. Vibrating wire type strain gauges and indicator,
	7. Bar cutting machine etc.
Strength of Materials	1. Hardness Testing machines (3),
	2. Torsion testing machine,
	3. Impact testing machine,
	4. Tile abrasion machine,
	5. Hot air oven
Engg. Mechanics Lab.	Six set-ups for Engineering Mechanics experiments
Structural Dynamics Laboratory	1. Shake table with 1 T capacity electro-dynamic shaker and vibration controller,
	2. Eight channel vibration recorder and analyzer
	3. Multi-channel data logger for dynamic strains and displacements (System-7000)
	4. Hand held vibration meter
	5. PSM laser based displacement sensor
	6. Noise level meter with FFT analysis software
Computer Laboratory	1. CPU with monitor 22 nos.
	2. Wall connected LCD projector for presentations,
	3. Different software's for structural analysis
	1. Digital rebound hammers(3),
	2. Ultrasonic Pulse Velocity Meters(2),

NDT Laboratory	3. Half cell potentiometer,
	4. Advanced Half cell survey system, Chloride field test system kit,
	5. Advance system for determining resonant frequency,
	6. Young's modulus etc.
	7. Core cutting machine set-up

3.3.5 Does the College have research facilities (centre, etc.) of regional, national and international recognition/repute? Give a brief description of how these facilities are made use of by researchers from other laboratories.

The institute is Mumbai University recognized PhD centre in Civil & Mechanical engg. Dept. Application is made for PhD centre in Electrical engg.. The students registering for their Ph.D programme with our college as research centre use research facilities (listed in Table 3.11) available in the laboratories of various departments. The college is also a QIP centre approved by AICTE New Delhi for Ph.D programme in Civil Engineering department. The research scholars from other institutes also use the library and laboratory facilities.

3.4 Research Publications and Awards

3.4.1 Highlight the major research achievements of the College through the following:

***Major papers presented in regional, national and international Conferences**

The summary of papers presented and published in conferences is given in Table 3.12. The list of Major papers presented in conferences during 2010- 2015 is provided in Annexure I.

Table 3.12:
Papers Publications during 2010-2015

***Publication per faculty**

Department	Number of Papers Presented/Published in Conferences	
	International	National
Mechanical	36	08
Civil	129	119
Electrical	18	01
Total	183	128

Table 3.13: Publication per Faculty

Sr.No	Name of the Faculty	Number of Publications			
		International. Journal	International. Conference	National Journal	National Conference
Mechanical Engineering					
1	Dr. R.B. Buktar	06	--	--	01
2	Dr. Nilesh Raykar	05	04	--	02
3	Mr. D.N. Jadhav	08	04	--	--
4	Dr. Kiran Bhole	--	03	--	--
5	Dr. R.S. Maurya	06	09	--	--
6	Dr. S.B. Rane	06	04	--	--
7	Dr. S.S. Umale	05	01	01	--
8	Mr. P.K. Muley	--	--	--	--
9	Mrs. Janbandhu		01		
10	Mr. S. Vankar	01	--	--	--
11	Mr. K. Bhavsar	02	--	--	--
12	Mr. B.N. Bhasme	--	--	--	01
13	Mr.Shaikh H.M.	--	--	--	--
14	Mr.Sharad Valvi	01	01	--	--
Civil Engineering					
1	Dr. P.H. Sawant	7	41	08	45
2	Dr. Prashant P. Nagrale	11	10	08	08
3	Dr. A.R. Kambekar	15	17	02	28
4	Dr. P.G. Gaikwad	01	08	03	04
5	Dr. Hansa Jeswani	08	22	01	10
6	Prof. Reshma Raskar Phule	01	02	02	05
7	Dr. Anil Ghadage	11	15	04	12
8	Prof. Khitija Nadgouda	01	02	01	
9	Prof. Snehit Kumbhar	03	01		02
10	Prof. Akansha Agrawal	02	01	01	02
11	Prof. Shellja Bansal	-	-	-	01

12	Prof. Manisha Shirvaikar	01	-	-	02
13	Prof. Priyanka Deshmukh	-	-	-	-
14	Dr. M.M. Murudi	04	10	03	-
15	Prof. A.A. Bage	02	-	04	-
16	Prof. A. Deshpande	-	-	-	-
17	Prof. Shoeb Khan	-	-	-	--
18	Prof. Tausif H.	01	-	01	-
19	Prof. Pathan Sohail	-	-		-
Electrical Engineering					
1	Dr. B. B. Pimple	01	-	07	01
2	Ms. Anupa Sabnis	02	-	04	02
3	Dr. Rahul Dahatonde	04	01	01	01
4	Ms. Sangeeta Daingade	07	-	10	01
5	Dr. N. W. Kinhekar	02	-	09	01
6	Mr. Nitin Bhitre	-	-	02	--
7	Ms. Swati Lavand	02	-	03	--
8	Mr. Rahul D. Chavhan	02		02	--
9	Mr. Vishal S. Dake	02		01	--
Total		129	157	78	129

***Faculty serving on the editorial boards of national and international Journals**

Table 3.14: Faculty serving on the editorial board/Reviewer of Journal

Name of the Faculty	International	National
Dr. Hansa Jeswani	1. Water Science & Technology	--
	2. IWA	--
Dr. Anil N. Ghadage	1. International Journal of Energy Research (Willey Sons)	--
Dr A R Kambekar	1. "Journal of Offshore Structure and Technology"	--
	2. "Journal of Water Resources Engineering and Management"	
	3. "World Academy of Science, Engineering and Technology",	

	4. “ISH Journal of Hydraulic Engineering” Volume 15, Issue 2, 2009	
Dr.S.B.Rane	1. International Journal of Supply Chain and Inventory Management, Inderscience Publishers.	
	2. Reviewer for Taylor Fransis Journal of Production & Manufacturing Research	

*** Faculty members on the organization committees of international conferences, recognized by reputed organizations / societies.**

**Table 3.15:
Faculty serving on the organization committees of international conferences**

Sr.no	Name of the faculty	Title & Place of Conference
1	Dr.Hansa Jeswani	TRO India
3	Dr.Kiran Bhole	1. 2 nd International conference on Nascent technologies in Engineering.
4	Dr.S.B.Rane	1. International Conference on Best Practices In Supply Chain Management on 22-23 Nov 2012 2. International Conference on Emerging Trends in Mechanical Engineering (ICETiME 2016) during 23 rd – 24 th Sept, 2016 at IFHE University 3. International Conference on “Advances in Mechanical Engineering-2016” (ICAME-16)
5	Dr.Kiran Bhole	1. 1 st International conference on Nascent technologies in Engineering.
6	Dr.S.S.Umale	1 World conference on Applied science engineering & technology (WCASET), Goa 2. International conference Applied science engineering & technology 3. Institute of Engg. Research & Publications (IFERP)

3.4.2 Does the College publish research journal(s)? If yes, indicate the composition of the editorial board, publication policies and whether it is listed in international database?

No. The college does not publish research journal. However the college publishes a magazine.

3.4.3 Give details of publications by the faculty:

***number of papers published in peer reviewed journals (national / international)**

Publication by faculty is given in Annexure I. Summary of publications is given in Table 3.16.

Table 3.16: Papers published in peer reviewed journals

Department	Total Number of Papers published in journals		Total
	International	National	
Mechanical	36	08	44
Civil	68	38	106
Electrical	18	01	19

* Monographs

* Chapters in Books

Table 3.17: Chapters in Books

Author(s)	Year	Title	Complete Reference of Book(Publisher, Edition, Page No.)
Ghangrekar M.M., Ghadge A.N.	2013	Scaling-up of Microbial Fuel Cell Using Clay Membrane Separator and Non-catalyzed Electrode Materials	Singh, R.R., Pandey, A., Larroche, C. (Eds.), Advances in industrial biotechnology, I K International Publishing House, New Delhi, India, pp. 45-57.
Chatterjee, P., Pandit, S., Ghadge, A. N., & Ghangrekar, M. M.	2013	Performance Comparison of Air-Breathing Cathode and Aqueous Cathode Earthen Pot Microbial Fuel Cell	Recent Advances in Bioenergy Research, 356.
A R Kambekar and	2012	Applications of Artificial	Proceedings of QIP short

M.C. Deo		Intelligence Techniques in Simulation and Forecasting of Wind Wave	term course on “Coastal Processes and Modeling”, pp. Part III 1-12. March 19 th -23 rd , 2012 at IIT Bombay, Powai, Mumbai.
A R Kambekar	2012	Value Engineering	AICTE-ISTE two week course for Engineering/ polytechnic teachers at MHSS Polytechnic
Pratibha D. Singh and A.R. Kambekar	2017	Assessing Impact of Sea Level Rise Along the Coastline of Mumbai City Using Geographic Information System	e-book by Springer Transactions in Civil and Environmental Engineering, titled “Understanding Built Environment” © 2017 Editors: Seta, F., Biswas, A., Khare, A., Sen, J. (Eds.), e-book, ISBN 978-981-10-2138-1.
Chetna Sharma	2012-13	Material Science	1-49

* **Books with ISBN numbers with details of publishers**

Table 3.18: Books published by faculty

Author(s)	Year	Title	Complete Reference of Book(Publisher, Edition, Page No.)
Prof.Vinod Sharma	2013-14	Applied Mathematics-II	Techmax Publication, ISBN no-9789350771976

*number listed in International Database (For e.g. Web of Science, Scopus, Humanities International Complete, Dare Database - International Social Sciences Directory, EBSCO host, etc.)

* Citation Index – range: 1-224

* SNIP:-

* SJR:-

* Impact factor – range: 0.5 - 4.0

* h-index: 1 – 7

Table 3.19: Citations, h-index and I10-index of faculty

Name of the faculty	Citation	h-index	I10-Index
Dr. P. H. Sawant	24	2	1
Dr. Mohan Murudi	88	2	1
Dr.Prashant Nagrale	46	2	1
Dr. A. R. Kambekar	122	4	4
Dr. A. A. Bage	05	01	0
Dr. Hansa Jeswani	41	3	1
Dr. Anil N. Ghadge	68	5	3
Dr.Nilesh raykar	16	2	1
Dr.R.S.Maurya	16	2	0
Dr.Sudhakar Umale	03	01	0
Dr.Kiran Bhole	17	03	0
Prof.D.N.Jadhav	07	01	0
Prof.Kunal Bhavsar	02	01	0
Dr. B. B. Pimple	24	04	0
Dr. N.W. Kinhekar	24	1	1
Prof. Sangeeta D.	11	0	0
Prof. Anupa S.	10	0	0
Prof. Nitin Bhitre	05	0	0

3.4.4 Indicate the average number of successful M.Phil. and Ph.D. scholars guided per faculty.

The details of M.Phil and Ph.D guidance by faculty are given in Table 3.20.

Table 3.20: M.Phil and Ph.D guidance by faculty on roll

Sr.no.	Name of the faculty	Guidance	
		MPhil	PhD
1	Dr. P. H. Sawant	-	04 Awarded +02 Pursuing
2	Dr M. M. Murdi	-	05 Pursuing
3	Dr. P P Nagrale	-	02 Submitted+ 03 Pursuing
4	Dr. A. R. Kambekar	-	03 Pursuing
5	Dr A. A. Bage	-	05 Pursuing
6	Dr.S.B.Rane	-	3 Awarded + 03 pursuing
7	Dr.S.S.Umale	-	02 pursuing
8	Dr.R.S.Maurya	-	02 pursuing

3.4.5 What is the stated policy of the College to check malpractices and misconduct in research?

The college has a research committee at department level to monitor the progress of research work. The candidates are counseled for the consequences of malpractices and misconduct in research. The final submission of Ph.D thesis is approved and forwarded to university only after the satisfactory presentation before institute level committee (with one external subject expert) and publications based on the study carried out.

Publications in peer reviewed journals are mandatory and thereby check any possible malpractice and misconduct in research. Further the research work is extensively guided by the faculty. Even the dissertation works of PG students are monitored and evaluated by a departmental post graduate committee. Asset/stock registers are maintained and Financial audits are carried out.

3.4.6 Does the College promote interdisciplinary research? If yes, how many inter departmental / inter disciplinary research projects have been undertaken and mention the number of departments involved in such an endeavour.

The college always encourages the faculty to carry out studies and organize programmes in interdisciplinary areas. There are some efforts of interdisciplinary research between Mechanical, Civil & Electrical Engineering departments. The college has also organized conferences/workshops in interdisciplinary areas.

3.4.7 Mention the research awards instituted by the College.

There is no separate award instituted by the college for research. However it is decided to give “Best Teacher” award every year from the year 2016-17. Research component will be one of the parameters for choosing faculty for this award.

3.4.8 Provide details of

*** Research awards received by the faculty (Table 3.21)**

Table 3.21: Research awards received by the faculty

Name of the Faculty	Prize Award received	Organization/Institute	Year
Dr.S.S.Umale	Best Technical Paper Award	Institute of Foundry	2015
Dr.Kinhekar	POSOCO Award	POSOCO	2015

* Recognition received by the faculty from reputed professional bodies and Agencies

Most of the faculty are members/life members/fellows of professional bodies like ISTE, IET, IEL, IWWA, IEEE, CSI etc and details are provided in Table 3.22.

Table 3.22:
Recognition received by faculty from reputed professional bodies and agencies

Name of the Faculty	Prize Award received	Organization/Institute	Year
Dr.S.S.Umale	Best Technical Paper Award	Institute of Foundry	2015
Dr. Kinhekar	POSOCO Award	POSOCO Institute	2015

3.4.9 State the incentives given to faculty for receiving state, national and international recognitions for research contributions.

The faculty are provided with financial support towards registration fee, and travel grants for attending conferences. The college also encourages and financially supports the faculty to submit and present the proposals under the various schemes of national funding agencies. The expenses incurred by the faculty to visit the specialized laboratories/centres/libraries/industries for their research work are also reimbursed to faculty.

3.5 Consultancy

3.5.1 What is the stated policy of the College for structured consultancy? List a few important consultancy services undertaken by the College.

The policy of the college is to encourage the consultancy and testing services which help the faculty both academically and financially. The amount received towards consultancy assignment is distributed in 60% (faculty and staff involved) and 40% (College) proportion after deducting expenses incurred. The amount received towards testing services is distributed in 50% (faculty and staff involved) and 50% (College) proportion after deducting expenses incurred. The testing activities include testing of water, soil, wastewater, air and noise monitoring, meter etc. Some of the consultancy activities are listed in Table 3.23.

Table 3.23: List of Consultancy Assignments

Consultancy Activity	Co-ordinator	Year
Private, Survey of Swashraya Co.Op. Hsg. Soc. Ltd. NA Plot CTS No. 400/1 and 400/2, of village Upsara street, Andheri (West), Mumbai 58	Dr. Ajay R. Kambekar Dr. Anil N. Ghadge	May-June 2016
Private Firm- M/S B.G. Shirke Construction Technology Pvt. Ltd.	Dr. Anil N. Ghadge	July-2016
Testing of building and road materials (Amt. Rs. 3696.00)		June-2016
Testing of building and road materials (Amt. Rs. 12867.00)		March 2016
Testing of building and road materials (Amt. Rs. 10248.00)		Dec-2015
Testing of building and road materials (Amt. Rs. 27333.00)		September-2015
Testing of building and road materials (Amt. Rs. 5340.00)		June-2015
Soil Report (Amt. Rs. 13334.00)	Mrs. Kshitija Nadgouda	October-2015
Soil Report (Amt. Rs. 17544.00)		October-2015
Soil Testing (Amt. Rs. 2193.00)		August-2015
Soil Testing (Amt. Rs. 4386.00)		October-2015
Soil Testing (Amt. Rs. 4210.00)		October-2015
Soil Testing (Amt. Rs. 9649.00)		October-2015

3.5.2 Does the College have College-industry cell? If yes, what is its scope and range of activities?

Yes. The college has Industry-Institute-Interaction Cell (IIIC). The cell is also associated with Training and Placement activities. Scope of activities: The scope of this cell includes

- ✓ Initiation and development of contacts with industries/institutes/organizations
- Identification of student and industry needs
- ✓ Identification of areas of interaction
- ✓ Enhancement of interactions with industries

- ✓ Placement of students

Range of activities: The range of activities include

- ✓ Organization of collaborative activities like training programmes, expert lectures, industrial visits, career guidance programmes aptitude tests, personality development, entrepreneurship.
- ✓ Interaction with industries for allocating internship to students.
- ✓ Guidance to the students for getting sponsored dissertations.

3.5.3 What is the mode of publicizing the expertise of the College for consultancy services? Mention the departments from whom consultancy was sought.

The college has well-established contacts with government, nongovernment organizations and industries. The college has good reputation for its consultancy and testing activities in the region. The college web-site provides details of facilities and expertise available in various departments. On the occasion of every interaction with other institutes and industry/organization, the kind of consultancy and testing activities provided by the college are briefed. Departments of Civil Engineering, and Mechanical Engineering are the leading departments in consultancy and testing activities.

3.5.4 How does the College encourage the faculty to utilise the expertise for consultancy services?

The faculty and staff involved in the consultancy and testing activities are paid attractive shares. The expenses incurred are paid in addition.

3.5.5 List the broad areas of consultancy services provided by the College and the revenue generated during the last four years.

The broad areas of consultancy provided by the College and the revenue generated from consultancy are given in Table 3.24.

Table 3.24:

Broad Area of Consultancy Services and Revenue Generated

Broad area of consultancy assignment undertaken	Revenue generated (Last four years) (Rs. Lakh)
2012-13	
1) Proof Checking of Structures 2) Instrumentation of Bridges 3) NDT 4) Testing of building Materials 5) Structural condition assessment of Building etc.	68,95,958=00
2013-14	
1) Proof Checking of Structures 2) Instrumentation of Bridges	73,80,275=00

3) NDT 4) Testing of building Materials 5) Structural condition assessment of Building etc.	
2014-15	
1) Proof Checking of Structures 2) Instrumentation of Bridges 3) NDT 4) Testing of building Materials 5) Structural condition assessment of Building etc.	87,43,230=00
2015-16	
1) Proof Checking of Structures 2) Instrumentation of Bridges 3) NDT 4) Testing of building Materials 5) Structural condition assessment of Building etc.	65,44,362=00

3.6 Extension Activities and Institutional Social Responsibility (ISR)

3.6.1 How does the College sensitize the faculty and students on Institutional Social Responsibilities? List the social outreach programmes which have created an impact on students' campus experience.

The college encourages the faculty and students to initiate, participate and implement the programmes which contribute to societal awareness for various issues. Different student clubs/associations (CESA, MESA, EESA, History Club, Speakers Club) in the college are monitored by department faculty coordinator with Dean Students. The activities of these include: organization of awareness programmes (for environment, water conservation, computer education etc), blood donation camps, educating rural population, building check dams, etc. NCC is also active in organizing activities which address societal problems. B.Tech. projects and M.Tech. dissertations in few cases were based on addressing the life problems in rural areas. The water supply and sanitation schemes were designed for some villages.

3.6.2 How does the College promote College-neighborhood network and student engagement, contributing to holistic development of students and sustained community development?

The students are encouraged and supported to organize/ participate in the events where students have scope for working with others. The college is a part of lead college activity of Mumbai University. Under this the students regularly interact with other

college students. Participation in the events organized in the parent or Neighborhood College helps for holistic development of students.

3.6.3 How does the College promote the participation of students and faculty in extension activities including participation in NSS, NCC, YRC and other National/ International agencies?

NCC is active in the college. Many extra-curricular and societal programs are generally organized under these clubs. The programmes organized include Shramdan for road cleaning, blood donation camps, Bandhara construction, HIV awareness, Voter awareness etc.

3.6.4 Give details on social surveys, research or extension work (if any) undertaken by the College to ensure social justice and empower the under-privileged and most vulnerable sections of society?

The association of Mechanical Engineering students (MESA) regularly organizes blood donation & bone marrow camps to help society

3.6.5 Give details of awards / recognition received by the College for extension activities /community development work.

The college is planning to work as a training center for industries (e.g. Mahindra & Mahindra & L&T) for training lower cadre workers. The college has received appreciation certificate from TATA memorial for blood donation.

3.6.6 Reflecting on objectives and expected outcomes of the extension activities organized by the College, comment on how they complement students' academic learning experience and specify the values and skills inculcated?

The involvement of students in these extension activities through organization of/participation in extra-curricular activities has helped students to develop their organizational skill, leadership qualities, understanding and inculcation of societal responsibilities, and ethical behavior. The other skills developed through this program are team spirit, time management, professional skills, and communication skills (both oral and written) etc.

3.6.7 How does the College ensure the involvement of the community in its outreach activities and contribute to the community development? Detail the initiatives of the College which have encouraged community participation in its activities.

The college proposes to set-up a separate community cell. Numbers of programmes will be organized to address training needs of employed/unemployed/skilled/unskilled

persons through this cell. Outreach activities planned for community development through this cell include training programmes on office automation, accounting, AUTOCAD & CNC.

3.6.8 Does the College have a mechanism to track the students' involvement in various social movements/activities which promote citizenship roles?

There are different clubs/associations/chapters of student coordinated by the faculty. The involvement of the students in social activities is monitored through these clubs. The student portfolio forms filled by every student each year with comments of mentor furnish the information regarding his/her academic performance and participation in cocurricular and extra-curricular activities. Such information is collected by the Students and is available with the faculty coordinator (of respective department's Student Association) of the department.

3.6.9 Give details on the constructive relationships (if any) with other institutions in the nearby locality in working on various outreach and extension activities.

The college is looked upon as a leader in technical education by the engineering colleges in Maharashtra. Being the well known engineering college in this area, many senior faculty members of this college have helped other engineering colleges in their infant period right from their establishment. Many faculties have worked as visiting faculty to these colleges. The college is a part of lead college activity promoted by Mumbai University. Besides, the college is a lead college in promoting BARC initiated transfer of technology scheme to rural area.

3.6.10 Give details of awards received by the institution for extension activities and/contributions to the social/community development during the last four years.

The college is recognized with good ranking announced by Outlook. The college is recognized institute for TEQIP funding due to its best performance in TEQIP phase I.

3.7 Collaboration

3.7.1 How has the College's collaboration with other agencies impacted the visibility, identity and diversity of activities on the campus? To what extent has the College benefitted academically and financially because of collaborations?

The college has collaborative activities with government and non-government organizations. Impact of it is summarized below:

- ✓ Refurbishment of laboratories
- ✓ Strengthening of laboratories in terms of equipment

- ✓ Exposure of students for real life projects
- ✓ Regular interaction of students and faculty with professionals and academicians
- ✓ Internship/sponsorship to students.
- ✓ Industrial visits

MoU has been done with Larsen & Toubro (L&T), AKER solutions, Christiani & Sharpline, GODREJ & BOYCE, BADWE Engineering Pune, Reliance, DESPAT, Dr. Fixit. Emerson Climate Technologies Pune. Emerson has donated components of Air Compressors to SPCE for its Refrigeration & Air Conditioning (RAC) Laboratory because of which, it has become easy for the students to understand those concepts of RAC.

3.7.2 Mention specific examples of, how these linkages promote

***Curriculum development**

Most of the UG projects are carried out for real life problems in all the departments. 60% of the students can opt for sponsored PG dissertations in industry.

*** Internship, On-the-job training**

UG students are allowed to opt for internship for one month (per semester). Summer training in industry/organization is a part of curriculum in some of the programmes. Renowned industries like L&T & AKER Solutions has funded scholarship of Rs. 5,000/- p.m. for pursuing Internship during June-July and Rs.10,000/- per month during Final Year UG project at the Small or Medium Scale Industry for 30 students.

***Faculty exchange and development**

Faculty training is a part of MoU with other academic institutes & industry. However it is yet to be explored.

*** Research, Publication**

There is increase in number of publications of each department.

***Consultancy, Extension**

The linkage with government and non-government organizations has promoted consultancy and testing activities. Civil and Applied Mechanics departments in particular have excelled in these activities.

***Student placement**

It has improved to great extent. More than 90% students are placed every year.

3.7.3 Does the College have MoUs nationally / internationally and with institutions of national importance/other universities/ industries/corporate houses etc.? If yes, explain how the MoUs have contributed in enhancing the quality and output of teaching-learning, research and development activities of the College?

Yes. The college has signed MoUs with reputed institutions, organizations and corporate houses. It has helped to carry out UG projects/internship/PG sponsored dissertations in industries. MoU with corporate houses has enhanced the interaction of student with industries thereby the quality of teaching-learning has improved. The sharing of resources (laboratory/library etc) with other colleges, and organization of collaborative workshops/seminars/training programmes are also a part of MoU. The industries with which MoUs are signed are L&T, AKER Solutions, Christianin & Sharpline, and Relaince etc. The interaction with the experts from these industries has helped to improve the curriculum, teaching-learning methodology, research and development to attain the Vision of the institute.

3.7.4 Have the College industry interactions resulted in the establishment / creation of highly specialized laboratories / facilities?

Yes. Interaction with industry has resulted in specialized laboratories. The name of the centres, industry and departments where in which it is established is given in the Table 3.25.

Table 3.25: List of specialized laboratories/facilities

Sr.no	Industry/Organization	Laboratory	Department
1	L&T, Mumbai	L&T Switch Gear Lab	Electrical Engg.
2	Emerson India Ltd, Pune	Refrigeration & Air Conditioning (RAC) Lab	Mechanical Engg.

Any additional information w.r.t. Research, Consultancy and Extension, which the institution would like to include

The college is renowned for its testing and consultancy activities. The technical audits are conducted by the college on requisition by government and non-government organizations. The students are involved in consultancy and testing activities to provide them an exposure to handle real life problems. The students are also encouraged to undertake various activities which will help the society.

CRITERION IV: INFRASTRUCTURE AND LEARNING RESOURCES

4.1 Physical Facilities

4.1.1 How does the College plan and ensure adequate availability of physical infrastructure and ensure its optimal utilization?

The college was established in 1962. Since then the adequate availability of physical infrastructure was duly identified and has been planned and constructed accordingly. The college imparts three UG programs and five PG programs as mentioned in Criterion 1.. Each of the three departments are provided with built up space as per the requirements of AICTE in form of class rooms, laboratories, tutorial and seminar rooms, staff rooms and departmental library. In addition to this there are central facilities in the form of library, computing facility, canteen, student recreational facilities, and auditorium. Allied areas in form of hostels, and mess cater the need of students. The campus also provides appropriate parking facility for two wheeler and four wheeler vehicles.

Table 4.1: Details of Built-up Area

Sr.no.	Department/Amenity	Carpet Area,Sq.m
1	Mechanical Engineering	1329.86
2	Civil Engineering	1965.87
3	Electrical Engineering	1633.27
4	Library	489.74
5	Central Computing Facility	147.94
6	Mess	220.00
7	Canteen	180.00
8	Auditorium	350.00
9	Hostel Facility	2300
10	Student Recreational Facility	94.00

The college was selected as a Network Institute for the Technical Education Quality Improvement Programme (TEQIP) both, phase I and II, of the Ministry of Human Resources Development and the World Bank. With funding received under this, old and obsolete equipment in the various laboratories are supported with state of art equipment.

It is common practice to prepare and submit budget proposals for equipment procurement and departmental refurbishment by individual department every year. The proposals are scrutinized and funds are sanctioned for subsequent year for the optimal utilization of funds.

It is common practice to prepare research and funding proposals for various funding agencies by individual department every year. The funds thus obtained are utilized optimally for the said purpose.

The central facilities are common areas for all the institutional components and organized, developed and maintained by institute level building planning and maintenance cell.

Every department of the college has Seminar Hall of different capacity in addition to common auditorium and open air pranganga quadrangle as central facility. These may be utilized by any department depending on availability and requirement for the conduct of guest lectures, workshops, training programs and co- curricular and extra-curricular activities amiably.

In order to ensure its fullest utilization class time table utilization plan is prepared centrally and college timings are adjusted for effective utilization. All the classrooms, staff amenities, and laboratories are open for all the concerned round the clock to meet their academic requirement.

Students can freely use any of the facility off the college hours for their cocurricular activities.

4.1.2 Does the College have a policy for creation and enhancement of infrastructure in order to promote a good teaching-learning environment? If yes, mention a few recent initiatives.

The college maintains a policy for ambient teaching and learning environment. The institute bears vision of implementing world class educational facilities. In addition to adequate provision of modern class room and laboratory infrastructure for each department, the institute has tie up with world renowned institutes and industries to have real feel of engineering applications.

Recently, MoU's are signed with renowned industrial organizations like L&T, AKER Solutions, GODREJ, RELIANCE, BADWE, Christiani & Sharpline, Wright State University Ohio. Efforts are taken to develop laboratories through the industry institute partnership.

There is a common practice to have interaction meetings with IIT professors, industry personnel and researchers. Sharing of expertise and real field experience promotes a good teaching-learning environment. In addition the College provides a sound platform for Guest Lectures, Expert Lectures, Site Visits & Internship training to understand current advances in the field.

4.1.3 Does the College provide all departments with facilities like office room, common room, and separate rest rooms for women students and staff?

Every department has its own office and it is under the control of HOD of respective department. There is common facility at central level for women students and staff.

4.1.4 How does the College ensure that the infrastructure facilities meet the requirements of students/staff with disabilities?

There are two buildings (i) Academic Building (ii) Workshop. Both the buildings are provided with infrastructure facilities suitable for physically challenged person.

4.1.5 How does the College cater to the residential requirements of students?

The college provides hostel facility for more than 360 students to cater their residential requirement. The capacity and occupancy of hostel is shown in the following table.

Table 4.2: Capacity of the Hostels and Occupancy
(Built up area rounded off in sq. m.)

Sr.No.	Year of Construction	Built up area	No. of rooms	No. of students	Occupancy per room
Boys					
1	1963	3295	17	68	4
			65	195	3
			15	15	1
	Total	3295	97	278	
Girls					
1	1963	605	14	56	4
			5	10	2
	Total	605	19	66	

Recreational facilities in hostel/s like gymnasium, yoga center, etc. : There is provision of indoor sports facilities such as fully equipped gymnasium, Table Tennis, Carom. There are additional outdoor sport facilities for cricket, football, volleyball, basketball. The cricket ground is circumferentially designed with mud track serving as walking trail and running track.

Broadband connectivity / wi-fi facility in hostel/s. : Institute is planning to provided Secured Wi-Fi Network with 40 MBPS internet speed. The facility will have MAC base address and user identity base authentication.

4.1.6 How does the College cope with the health related support services for its students, faculty and non-teaching staff on the campus and beyond?

There are several hospitals around campus. A qualified doctor is appointed from a reputed hospital, who caters to the needs of students and staff working in the college. As and when there is emergency, college vehicle is employed for commutation. There is MoU between the hospital and college for providing essential medical services. Camps are arranged for health check-up, blood donation, bone marrow testing, and yoga through external agencies in the campus every year.

4.1.7 What special facilities are made available on the campus to promote interest in sports and cultural events?

As mentioned above in 4.1.5, there is a provision of indoor as well as outdoor sport facility for the students and staff. The facilities can be accessed off the college hours. All students can participate in annual sports competition and social gathering held annually at college. The students can also participate in any competition as per their interest in sports and cultural events organized at university, and state/national level. For each of such activities, the concerned staff advisor guides the student for the participation. Such participation is encouraged by providing allowances as applicable. The absence in academics due to such participation is accounted for favorably. The best performer, both ladies and gents, in such activity are identified and awarded in annual functions like degree distribution ceremony. For every discipline there is students association e.g. CESA, Civil Engineering Students association (similarly MESA, EESA etc. for other disciplines) for conduct of extracurricular activities established in the college. In addition there are clubs at college level providing a platform for conduct of technical and cultural activities. There is a tradition of celebrating various cultural events annually.

4.3 Library as a Learning Resource Description Total number

Print Books	45267
Back Volumes	3880
Thesis	321
E-Books	11300
E-Journals	498
Other (Indexed Articles)	3022

4.2.1 Does the library have an Advisory Committee? Specify the composition of such a committee. What significant initiatives have been implemented by the committee to render the library, student/user friendly?

SPCE Central Library has library committee as advisory body nominated by Principal, SPCE consisting 6 members. The formation of the said committee is as follows:

- ✓ Chairman: Principal's Nominee
- ✓ Secretary: Librarian
- ✓ Members: One faculty Members each from all Degree Departments (3 Nos)

This committee plays a vital role in designing policy matters / decisions for smooth running of the Library. Two meetings in one semester are held to discuss the agenda. Responsibilities of Staff Library Committee are Budget Allocation; Policy Decisions; Forming Rules and Regulations and Controlling its implementation; considering demands received from readers and reviewing library rules as per need; Advising Librarian to solve administrative problems; Book selection in co-ordination with their respective heads of departments and advising Library in weeding out procedure.

4.2.2 The details of relevant sections are as follows:

Table 4.4: Library Details

Total area of the library (in Sq. Mts.)	557.11 Sq. Mts
Total seating capacity	150 Students
Working hours (on working days, on holidays, before examination days, during examination days, during vacation)	Library (issue) : 8.30 am – 8.30 pm, Digital Library and Study Library : 24 x 7 hours Reference Section: 8.30 am to 8.30 pm
Layout of the library (individual reading carrels, lounge area for browsing and relaxed reading, IT zone for accessing e-resources)	Reading Area: 144.42 sq. m.; Stacking Area: 170.99 sq. m.; Property Counter: 37.47 sq. m.; Server Room : 13.34 sq. m.; Issue/Return Counter : 23.42 sq. m. Book Processing Section: 13.83 sq.m.; Admin Area: 10.22 sq.m.; Computer Lab 1 : 25.52sq.m.; Computer Lab 2 : 60.41sq.m; IT Staff : 12.08sq.m.
Access to the premises through	Each section displays floor plan

prominent display of clearly laid out floor plan; adequate signage; fire alarm; access to differently abled users and mode of access to collection)	showing various sections. Each rack has adequate signage showing contents.
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4.2.3 Details on the library holdings

Table 4.5: Library Holdings

Description Total number	Description Total number
Print : Books: 45267 Back volumes: 3880 Thesis: 321	49468
Non print: A=6, V=37	43
Electronic: e-books: 11300 e-Journals: 498	11798
Others: (Indexed Articles)	3022

4.2.4 What tools does the library deploy to provide access to the collection?

The following tools are deployed by the library to provide access to the collection.

- ✓ OPAC :SLIM21 Web OPAC
- ✓ Library Website: The library does not have a separate website however it has in-house/remote access to e-publications through College web site.

4.2.5 To what extent is the ICT deployed in the library?

ICT is deployed in the library as follows:

Library automation : Slim21,

- ✓ Number of computers for public access : 70
- ✓ Numbers of printers for public access : 1
- ✓ Internet band width speed : 50 mbps
- ✓ Institutional Repository: Dspace software

- ✓ Participation in Resource sharing networks/consortia : DELNET; E-SHODHSINDU

4.2.6 Provide details (per month) with regard to

- ✓ Average number of walk-ins : 250 to 400 daily
- ✓ Average number of books issued/returned : 790/ per day
- ✓ Ratio of library books to students enrolled :
- ✓ (49468 books/1200 library members) : 41 books:1 library member
- ✓ Average number of books added during last three years :

Table 4.6 : Year wise Addition of New Books

Year	No of books added
2013-14	333
2014-15	445
2015-16	423
Total in 3 years	1201
Average per year	400

Average number of login to OPAC : 12 hits

- ✓ Average number of login to e-resources : = 1120 per month
- ✓ Average number of e-resources downloaded/printed : Every user can download or print the data as per their requirement
- ✓ Number of information literacy trainings organized : 2 per semester

4.2.7 Give details of the specialized services provided by the library

✓ Reference: Faculty as well as students has access to codes, handbook, and manuals in addition to other references. The college has subscribed IIT, Powai library for additional references. Core reference collection of McGraw Hill is also available to all readers through McGraw hill OnlineAccess.

- ✓ Reprography: The facility is equipped with Scanners, and photocopying tools.

The details of scanners and photocopying tools are as follows.

- Photocopying facility: there is centralize photocopying facility
- Inter Library Loan Service (ILL): DELNET facility of ILL and Document delivery facility, can be used to call for any copy of book not available in college library, as per the interest of user. In addition as mentioned above student or faculty of the college can have access to IITB, Mumbai library.
- Information Deployment and Notification : The information regarding author, title and subject can be deployed through Open Access Catalogue (OPAC)

- Internet Access : Every user can have access through networking or Wi-Fi
- Downloads: The facility is available.
- Printouts: The facility is available.
- Reading list/ Bibliography Compilation: The information is compiled through content Xerox facility and catalogue index in hard form in addition to OPAC.
- In-house/remote access to e-resources : NPTEL Videos
- User Orientation: All the PG Students, UG Students, and all

Teachers can avail relevant information through help desk facility. The users are also provided with necessary instructions for the access and usage of digital library. In addition every year students are trained for usage by conducting a workshop at the beginning of the semester and delivering lecture in every class.

- Assistance in Searching Databases: The search can be had through
 - 1) SLIM Software :Book Search Facility on OPAC Search on Title, Author, Keyword, Accession No.
- INFLIBNET facilities : E-SHODH SINDHU
- Surveillance System: The library also has surveillance System comprising cctv

4.2.8 Provide details on the annual library budget and the amount spent for purchasing new books and journals.

Table 4.7 : Library Annual Budget

Items	2013-14		2014-15		2015-16	
	Budget	Expenditure	Budget	Expenditure	Budget	Expenditure
Books	550000.00	534761.00	550000.00	575465.00	400000.00	380511.00
Journals	50000.00	86055.00	50000.00	50472.00	100000.00	108455.00
E-Books	1700000.00	1786517.15 (TEQIP)	600000.00	566590.00	20000.00	0.00
E-Journals	650000.00	686177.00	500000.00	484917.00	600000.00	612467.00
Institutional Membership	50000.00	60000.00	50000.00	40000.00	50000	40000.00
Total	3000000.00	3153510.15	1750000.00	1717444.00	1170000.00	1141433.00

4.2.9 Does the library get the feedback from its users? If yes, how is it analyzed and used for improving the library services.

The advisory committee takes cognizance of feedback received in the users feedback register and used to improve the services.

4.2.10 List the infrastructural development of the library over the last four years.

Two computer labs (20 +50) comprising multimedia and smart board is built in the year 2011-12 and 2015-16. New Books rack were purchased during 2014-15 and all 52 windows are renewed with sliding. Infrastructural development in last four years is presented in the following table.

Table 4.8: Infrastructural Development in Library

Year	Infrastructural Development	Total Cost (in Lakhs)
2013-14	Office Chairs	0.25
	Other	0.34
2014-15	Computer Chairs	0.27
	Book Racks	3.64
2015-16	Electric Material for new computer lab	2.10
	Aluminum Partition for computer lab	0.22
	Aluminum Windows	0.80
		3.65
	Computer Tables	0.99
	CCTV	1.53
	A/C (3 Nos.)	

4.2.11 Did the library organize workshop/s for students, teachers and nonteaching staff of the College to facilitate better Library usage?

Every year, in the beginning of semester workshop named as “**Know Your Library**” and “**Use of Digital Library**” are organized for students of UG, PG and staff members.

In addition to this, library has organized “Workshop on Content Management System using Joomla on 15th and 16th June 2012.

4.3 IT INFRASTRUCTURE

4.3.1 Does the College have a comprehensive IT policy addressing standards on IT Service Management, Information Security, Network Security, Risk Management and Software Asset Management?

Ans: Yes, College have IT policy standards on all IT services, including Wi-Fi, emails, Internet, etc. IT services are centrally managed through IT Infrastructure committee. Details of Committee are as follows:

Table 4.9
IT Committee

Dr. Rahul T. Dahatonde, Training & Placement Officer	Chairman
Mr. S. J. Sawant, Librarian	Member Secretary
Prof. Kunal Bhavsar, Workshop Superintendent	Member
Prof. Rahul Chavan, Asst. Prof. - Electrical Engineering	Member
Prof. Snehajit Kumbhar, Asst. Prof. - Civil Engineering	Member
Ms. Anushka Jadhav, Store-keeper	Member
Ms. Vishakha Shinde, System Analyst	Member

This committee is responsible for overall planning, maintenance and management of the IT Infrastructure and allied activities assigned by the competent authority from time to time.

Information Security and Network security is also centrally managed by Sonicwall Firewall NSA 4500. All users are having individual login id & password. Through which information security is maintained over network & locally. Firewall having defined policy through which internet access is maintained.

Risk management & Software asset management is done through IT Infrastructure committee, with prior approval of principal & later approval of purchase committee. All records are maintained in Central Stores Department.

4.3.2 Give details of the College's computing facilities (hardware and software).

- **Number of systems with configuration:**

Total No. of Systems: More than 300 & Configurations:

Table 4.10

Intel ® Core TM i3 CPU 550 @ 3.2 GHz 3.2 GHz	4 GB RAM	500 GB HDD
Intel ® Core TM i5 CPU @ 2.90 GHz 2.90 GHz	4 GB RAM	500 GB HDD
Intel ® Core TM Duo CPU E7500 @ 2.93 GHz 2.93 GHz	4 GB RAM	320 GB HDD

- **Computer-student ratio:**
- **Dedicated computing facility**

Table 4.11

Computers exclusively available to students	267
PCs exclusively available in Library	25
PCs exclusively available in Administrative Office	29
PCs exclusively available to faculty members	48
Internet bandwidth in Mbps	50
Printers available to students	25
Numbers of A1 size colour printers	13
Number of legal system software	7
Number of legal application software	42

- **LAN facility**

The institute also has gigabyte LAN with fibre optics backbone having more than 200 nodes connected onto it. All the computer laboratories are on this institute wide LAN. There are more than 15 high end manageable network switches which handle the internal data traffic. The computing facilities are available on different platforms, such as MS Windows and LINUX. The campus network is supported by 2 high speed servers with SAN Storage. This server also supports labs running Linux and open source software for providing the necessary services. These servers provide a core layer of services like Internet access, and file/print services, etc. for every workgroup (faculty, students, staff, etc.).

- **Wi-Fi facility**

The entire campus has been Wi-Fi enabled to provide mobility to the users in accessing various services available on institute's network. This Wi Fi network allows faculty, staff and students to log on to the Internet at any point of time. This wireless layer (wi-fi) is placed on top of highly dense network with high level of security using username password based authentication. A Firewall is also placed to provide higher security. A storage server with VPN based access and username password based authentication is also in place.

- **Propriety software / Open source softwares**

There is a wide variety of software packages available to the students and faculty for their academic and research work. These packages include several technical softwares such as MATLAB, Simulink, CATIA, Ansys, AutoCAD, MS Office Suite, project management, etc. An environment of wide variety of operating systems such as Windows 7 Professional, Windows NT Server 4.0,

Windows 2000 Server and LINUX has been established to make students familiar with latest operating systems.

- **Number of nodes/ computers with internet facility**

Almost all computers available & specified in above list having internet facility

- **Any other
E-mail facility**

The E-mail facility is managed through Google which provides us web based email client, built in chat facility, Google docs, Google apps, Google sites and few other facilities as well. Every faculty member is been given e-mail ID on spce.ac.in domain.

Website

Apropos to mandatory requirements of AICTE, college has informative website www.spce.ac.in. The information on website is regularly updated. Students, faculty members and all stakeholders access website regularly. Apart from statutory information, website also hosts useful academic resources for students, such as exam papers, scheme and syllabus, academic schedule, exam schedule, etc.

CCTV Surveillance

Apropos to guidelines from Hon' Supreme Court of India and Hon' Mumbai High Court, institute has also implemented campus wide CCTV Surveillance system for safety and security of all the stakeholders and property. This CCTV installation in our premises follows all the statutory guidelines to protect privacy of individuals. In case of any concerns regarding breach of individual's privacy, they can contact IT Infrastructure Management Committee. The video recording of the camera under concern is made available to the individual after approval from competent authority. In case of any untoward incident reported, the video recording is accessed, only to the authorized IT Person, with prior approval of competent authority

4.3.3 What are the institutional plans and strategies for deploying and upgrading the IT infrastructure and associated facilities?

- It is proposed to deploy a Centralized Management Information System (CMIS) for fetching the data from all the department
- It is proposed to deploy RFID enabled Library Management System to retrieve the library books
- Creating access to Quality Enhancement in Engineering Education (QEEE) digital library

- Deploying Alumni software to strengthen Mentor-Mentee relationship
- Deploy Virtual Laboratories so that the other institutes can also benefit from them.
- Private Cloud implementation with existing Virtualisation license & maintenance support for 3 years as per Institute requirement.
- Providing Wi-Fi access in the Hostel

4.3.4 Give details on access to online teaching and learning resources and other knowledge, and information provided to the staff and students for quality teaching, learning and research.

The College has fully computerized Central Library is a treasure house of knowledge that comprises ever growing collection of around 45,000 books; more than 8000 e-books (Springer, McGraw-Hill, Pearson, Proquest) and 3,500 bound volumes of journals both national and international subscribed by the college over the years. Institute has good collection of CBT (Computer Based Tutorials) and video lectures from eminent personalities of various IIT's (NPTEL) and these are made available to our users on Intranet through dedicated server. Library also has developed collection of Dissertations, submitted by post graduate students (M. Tech & PhD) of this Institution. These design oriented and case study thesis are kept for reference for the next generation in both form print and e-version. E-version of the same is made available through digital library.

E-Books / E-Journals

Table 4.12

1	National	40
2	International	08
3	E- Journals	IEL, ASCE, ASME, SPRINGER, SCIENCE DIRECT
4	E- Books	8402 + (SPRINGER, TMH, PEARSON, PROQUEST)

Digital Library

Table 4.13

1	Software package used for Digital Library	Dspace
2	Collections in Digital Library	E-books, M.Tech & P.hD Dissertations, Staff Publications, Administrative Records
3	Link for digital Library	http://dspace.spce.ac.in

4.3.5 Give details on the ICT enabled classrooms/learning spaces available within the College and how they are utilized for enhancing the quality of teaching and learning.

All departments are equipped with multimedia projectors and every classroom is equipped with LCD projector with wired/wireless internet connection. This facility is used by all the faculty for effective course delivery.

4.3.6 How are the faculty facilitated to prepare computer aided teaching-learning materials?

The thrust on computer aided teaching and learning has been there by all faculty members since a decade. Most of the faculty prepare power point presentations of the lectures and make judicious use of Chalk-and-Board and ppts to explain and make students learn a particular topic. Good e_material of the respective topics is made available to the students either through Moodle. Question bank, assignments, tutorials are uploaded on Moodle. (The details of Moodle are given below.) Video lectures of eminent Professors from IITs available through NPTEL are shown to students assisted by explanation and discussion by faculty.

Moodle is a free, online Learning Management system (LMS) enabling educator to create his/her own private website filled with dynamic courses that extend learning, anytime, anywhere.

The main features of Moodle are:

- Modern, easy to use interface with personalised dashboard
- Collaborative tools and activities
- Convenient file management
- Track progress
- Secure authentication and mass enrolment
- Bulk course creation and easy backup
- Manage user roles and permissions
- High interoperability
- Regular security updates
- Detailed reporting and logs

Faculty access different resources like Moodle through intranet and the access of internet resources through Wi-Fi is also available.

4.3.7 How are the computers and their accessories maintained? (AMC, etc.)

Annual maintenance contracts are availed.

4.3.8 Does the College avail of the National Knowledge Network connectivity directly or through the affiliating University? If so, what are the services availed of?

The internet leased lines are availed from different service providers so that the provision of redundant ISPs is there in order to have seamless connectivity across the campus. All the Internet Service Providers (ISPs) from whom the Institute has procured Internet bandwidth have installed fibre optics link from the campus to their hub. It is technologically equipped to increase it up to 100 MBPS as and when the need for more bandwidth arises. We are also in process of obtaining a dedicated line of 100 MBPS as part of Govt. of India's National Knowledge Network (NKN) project for more reliable connectivity

4.3.9 Provide details on the provision made in the annual budget for update, deployment and maintenance of the computers in the College?

Institute provides requisite budget for internet services and maintenance of the equipment in central computing facility and campus network infrastructure. The typical budget on yearly basis is as under.

- ✓ Internet Access : Rs. 30 Lakhs
- ✓ Equipment procurement & maintenance: Rs. 20 Lakhs

4.4 Maintenance of Campus Facilities

4.4.1 Does the College have an Estate Office / designated officer for overseeing maintenance of buildings, class-rooms and laboratories? If yes, mention a few campus specific initiatives undertaken to improve the physical ambience.

The college has maintenance cell comprising a maintenance in-charge, supervisor and six permanent workers. Four male labors and twelve female labors are contractually employed in addition to regular staff. The routine maintenance is looked after by this cell. Construction and refurbishment of works at individual departments and central common facilities are planned and executed through services of Dean Planning and designated officer for land records from Civil Engineering department. For the major works

4.4 Maintenance of Campus Facilities

4.4.1 Does the College have an Estate Office / designated officer for overseeing maintenance of buildings, class-rooms and laboratories? If yes, mention a few campus specific initiatives undertaken to improve the physical ambience.

The college has maintenance cell comprising a maintenance in-charge, supervisor and six permanent workers. The routine maintenance is looked after by this cell. Construction and refurbishment of works at individual departments and central common facilities are planned and executed through services of maintenance superintendent for land records from Building & works committee. For the major works consultation from external professional agencies are taken for design and supervision of civil works.

Most of the open areas are planted with flowering saplings and fruit bearing trees. Some of the areas are also landscaped with lawn and ornamental plants.

4.4.2 Does the College appoint staff for maintenance and repair? If not, how are the infrastructure facilities, services and equipment maintained? Give details.

It is common practice to appoint housekeeping staff and sundry labors for casual repairs of buildings on yearly basis. Petty contractors are appointed for some of works by calling quotations for the works.

Usually equipment are maintained through AMC with supplier. However if the equipment is needed for calibration or repairs, any service provider is consulted to set it right.

CRITERION V: STUDENT SUPPORT AND PROGRESSION

5.1 Student Mentoring and Support

5.1.1 Does the College have an independent system for student support and mentoring? If yes, what are its structural and functional characteristics?

Yes, the College has an independent system for student support and mentoring. The student support system comprises of Mentor, Counselor, HoD, Deans. The support system functions through several units such as Departmental Mentoring System, Guidance and Counseling Cell, Placement and Career Guidance Cell, Grievance Redressal Cell, and Committees for all co-curricular and extra-curricular activities. These committees include staff and student representatives and carry out the activities under the supervision of the Principal. The mentor meets the students once in a semester in group and individually as and when required. Such meetings enable the mentors to identify and help the academically weaker and economically needy students. The mentor also contributes to the physical, psychological, social and spiritual development of the students.

5.1.2 What provisions exist for academic mentoring apart from class room work?

Students are exposed to in-depth subject knowledge and other multilevel tasks through departmental association/clubs activities, seminars and workshops organized by the departments. Students update themselves on recent trends and developments in the subjects by participating in the training programmes and presenting papers in the state / national level seminars and inter-college competitions. Class tests, assignments seminars, and mini projects are conducted to evaluate the extent of understanding of fundamentals. Use of video lessons (NPTEL) and open courseware PPT's are used for better understanding of topics by the students outside classroom schedules. Faculty encourages students to participate in technical events at various technical institutions, workshops and quizzes with adequate support. Training is provided for the development of soft skills and personality. Group discussions, debates are the regular activities conducted by the mentors of Student clubs.

5.1.3 Does the College provide personal enhancement and development schemes for students? If yes, describe techniques employed e.g., career counseling, soft skill development, etc.

Yes, the College provides personal enhancement and development schemes for students.

Placement and Career Guidance Cell

Placement and Career Guidance Cell with a team of faculty members has been functioning. UG students are divided into groups and trained by experts in acquisition of aptitude skills, communicative skills, interview techniques and resume writing to enable them to take part in on-campus and off campus drives and to clear competitive examinations.

Soft Skill Development

College offers communicative skills through the regular curriculum as Communication Skills lab and it is offered by faculty teaching communication skills to cater to the need for language development skills. Department associations and clubs weekly conduct sessions related to soft skill development. The TPO also conducts special workshops for enhancing soft computing skills of the students

Academic Counseling

The academic performance of each student is monitored by the course teacher who imparts personal and academic guidance. Academic guidance is given both to the slow and the fast learners by the course teachers and they are properly channelized for their improvement. Student's performance in curricular and co-curricular activities is reported by mentor. The students are motivated and guided for pursuing higher education according to their choice and capabilities.

Other Enhancing Activities

Each and every departmental association organizes a common technical activity SPECTRA every year, through which they interact with academicians, professionals and also learn event management. Students acquire practical knowledge of the subject by industrial visits. It helps the students to update their knowledge on current affairs.

5.1.4 Does the College publish its updated prospectus and handbook annually? If yes, what are the activities / information included / provided to students through these documents? Is there a provision for online access?

Online Access

The college provides online access to the college website viz. (<http://www.spce.ac.in/>). The information on the website includes

a brief history of the institute, department details in terms of infrastructure and faculty, curriculum and examination related information in terms of RR, syllabi, student notices etc, achievements by students and faculty, placement details etc. The links to Library,

Academic Section, Exam Cell, and Alumni Section are provided. Information regarding Anti-Ragging Act and Sexual Harassment Act is also displayed on the website. Any urgent and important information is flashed on the home page of the website.

Information brochure contains:

- ✓ Brief history about institution
- ✓ Management
- ✓ Infrastructure
- ✓ Program details (UG and PG)
- ✓ Brief introduction about departments and laboratories
- ✓ Information about library
- ✓ Placements activity
- ✓ Extracurricular activities
- ✓ Achievements

Academic booklet contains:

- ✓ Rules and regulations
- ✓ Vision and Mission of institute as well as respective department
- ✓ Programme educational objectives and program outcomes
- ✓ Course details- course objectives and outcomes, teaching plan, assessment details.

In line with the vision and mission stated in the academic booklet, the institution aims at the holistic growth of the students combining a commitment to teaching excellence with extensive sports and cultural opportunities. The combination of excellent facilities and well qualified staff ensures that this commitment is honored. In addition to this, inputs in the form of feedback from the stakeholders (students, parents, alumni and employers) keep the institution accountable and on the track.

5.1.5 Specify the type and number of scholarships / freeships given to students by the College Management during the last four years. Indicate whether the financial aid was available on time.

- a) For UG – Social Welfare
 - TATA
 - Other
- b) PG – Financial Assistance of Rs 12400/-

5.1.5 What percentage of students receives financial assistance from state government, central government and other national agencies?

Following table gives the information about financial assistance received by the students from various agencies.

Table 5.1 Financial Assistance to UG students

FOR UG							
Academic Year	Category	Total no. of Students	No. of students with financial assistance		Total No. of scholarship holders	No. of students	Percentage
			Renewals	New			
2010-11	SC	84	56	38	94	180	52.22
	ST	34	26	08	34	180	18.88
	VJNT	69	40	29	69	180	38.33
	OBC	164	103	61	164	180	91.11
	SBC	10	06	04	10	180	05.55
2011-12	SC	97	82	15	97	180	53.88
	ST	37	36	01	37	180	20.55
	VJNT	91	72	19	91	180	50.55
	OBC	153	111	42	153	180	85.00
	SBC	10	08	02	10	180	05.55
2012-13	SC	103	82	21	103	180	57.22
	ST	42	30	12	42	180	23.33
	VJNT	83	63	20	83	180	46.11
	OBC	146	112	34	146	180	81.11
	SBC	07	06	01	07	180	03.88
2013-14	SC	97	82	15	97	180	53.88
	ST	40	31	09	40	180	22.22
	VJNT	93	77	06	93	180	51.66
	OBC	153	122	31	153	180	85.00
	SBC	10	05	05	10	180	05.55
2014-15	SC	88	69	19	88	180	48.88
	ST	30	24	06	30	180	16.66
	VJNT	74	64	10	74	180	41.11
	OBC	124	103	21	123	180	68.88
	SBC	11	08	03	11	180	06.11
2015-16	SC	83	68	15	83	180	46.11
	ST						
	VJNT	65	52	13	65	180	36.11
	OBC	95	77	18	95	180	52.77
	SBC	07	05	02	07	180	03.88

Table 5.2 Financial Assistance to PG students

FOR PG							
Academic Year	Category	Total no. of Students	No. of students with financial assistance		Total No. of scholarship holders	No. of students	Percentage
			Renewals	New			
2010-11	SC		0		04	41	9.75
	ST		0				
	VJNT		0				
	OBC		0				
	SBC		0				
2011-12	SC	07			10	84	11.90
	ST	01					
	VJNT	04					
	OBC	15					
	SBC	01					
2012-13	SC	10			26	126	20.60
	ST	01					
	VJNT	06					
	OBC	20					
	SBC	03					
2013-14	SC	16			62	137	45.25
	ST	00					
	VJNT	06					
	OBC	32					
	SBC	00					
2014-15	SC	21			123	161	76.39
	ST	03					
	VJNT	10					
	OBC	34					
	SBC	02					
2015-16	SC	18			151	175	86.28
	ST	03					
	VJNT	17					
	OBC	31					
	SBC	01					

Table 5.3: Details of Academic Year wise Financial Assistance (in Rs.) to Students from Different Agencies

Details of Financial Assistance	2015-16	2014-15	2013-14	2012-13	2011-12	2010-11
Govt. of India merit cum means scholarship	0.00	788062.00	0.00	0.00	0.00	0.00
SC and ST Scholarship	335650.00	2432179.00	3081975.00	2564175.00	797990.00	1208860.00
State Govt. (OBC) OBC, SBC and VJNT scholarship	292215.00	6653000.00	7471383.00	6835775.00	5253525.00	5692900.00
PST, SST, EBC, EX - SER, JAWAN and FF	84000.00	48000.00	33500.00	67160.00	59280.00	75500.00
State Govt. SC and ST Free-ship	0.00	3384155.00	3148630.00	315740.00	2609360.00	1661660.00
Any other - specify (Endowment)	--	--	--	--	--	--
Management	--	--	--	--	--	--
Total Amount						

5.1.7 Does the College have an International Student Cell to cater to the needs of foreign students? If so, what measures have been taken to attract foreign students?

No, so far no admissions have taken place by foreign students. Hence international student cell is not currently available in the college.

5.1.8 What types of support services are available for

- Overseas students,
- Physically challenged / differently abled students,
- SC/ST, OBC and economically weaker sections,
- Students to participate in various competitions/ conferences in India and abroad,
- Health centre, health insurance etc.

- Skill development (spoken English, computer literacy, etc.,)
- Performance enhancement for slow learners / students who are at risk of failure and dropouts
- Exposure of students to other institutions of higher learning/ corporate/business houses, etc.
- Publication of student magazines

✓ **Overseas students**

- No, so far no admissions for overseas students.

✓ **Physically challenged / differently abled students**

The college is providing the following facilities to the differently abled students

- Preference is given for hostel / in campus accommodation.
- Lecture and Examination halls are provided at the ground floor.
- Ramp is provided at central library.
- Extra time is given for examination of theory paper and labs.
- Administrative support to avail concessional travel to attend conferences, seminars,
- industrial visits etc. from state and central government agencies.

✓ **SC/ST, OBC and economically weaker sections**

- SC/ST, OBC and economically weaker Sections are given fee reimbursement provision provided by the Government.
- Social Welfare Department, GoM, book bank scheme is provided to SC/ST students.

✓ **Students to Participate in various competitions / conferences in India and abroad.**

- Students are encouraged to participate in various competitions and conferences in India with financial assistance from the TEQIP Fund.
- Large number of students participates in various events organized outside the college.
- Good number of students gets prizes in events organized by Inter University and Inter Collegiate events.
- Students are provided with necessary guidance for the competitions like SAE/BAJA, SUPRA, ROBOCON, GO CART etc.

✓ **Health centre, health insurance etc.**

- First aid boxes are made available at central workshop and laboratories.
- The students are covered under accident insurance policy.
- A qualified doctor visits the institute regularly. It caters to the needs of students and staff working in the college.
- College vehicle is available 24 × 7 for emergency.
- Frequent medical check -up and blood donation camps & bone marrow testing camps are arranged (Twice in a year) – 4 Blood Banks participation every year).
- Free Eye check-up camps are organized every year for students, staff members and their family by Bombay Hospital.

✓ **Skill development (spoken English, computer literacy, etc.,)**

- The College conducts Training Programmes in Communication Skills and Soft Skills by professionals. For this a well-equipped, highly configured and dedicated language lab as well as central computing facility with latest software is provided.
- Curriculum is so designed to make students 100% computer literate.
- Add-on programs are conducted on the following areas: Soft Skills, Communication Skills. Communication Skills and Language Lab are introduced in the curriculum for all students.
- Students and faculty members are encouraged to use NPTEL, Webinar facilities.
- TPO office also conducts special programs on soft skill development.

✓ **Performance enhancement for slow learners / students who are at risk of failure and dropouts**

Slow learners/students who are at risk of failure and dropout are identified and based on the performance of the students of in semester test & end semester examinations, students are provided counseling for performance enhancement. Remedial classes are conducted for students who have backlogs.

✓ **Exposure of students to other institutions of higher learning / corporates / business houses, etc.**

- Students are encouraged and guided to participate in events organized by the college and other institutions.
- Technical Event SPECTRA is organized every year in which students of other institution participate.
- Students are encouraged to take internship / sponsored projects at IITs, other reputed institutes and organizations.

- Industrial visits and expert talk of professionals from industry are arranged for practical exposure.
- Workshops and seminars are organized on recent developments in technology.
- Workshops on entrepreneur development are organized for the students to enhance the business development qualities in students.
- ✓ **Publication of Student Magazines**
 - Institute magazine is published every year. It serves as a platform for the exhibition of the creative potentialities of the students.
 - Souvenir of institute level technical activity DISHA is published every year.
 - Some of the Departmental Associations publish their magazine every academic year.

5.1.9 Does the College provide guidance / coaching classes for Civil Services, Defense Services, NET/SLET and any other competitive examinations? If yes, what is the outcome?

Yes, the following are the details:

The Awareness is created for Civil Services, Defense Services, and other competitive examinations to inculcate the interest of the students. The college faculty Provides guidance for admission tests like GATE, GRE, TOEFL, CAT and other competitive examinations. Professional agencies are also invited regularly for the guidance of competitive examinations. The students are trained in Verbal & Non-Verbal communication and for analytical skills which help them for Campus Placements and other Competitive Examinations.

Outcome:

15-20% of students get qualified in GATE/GRE/CAT, 80-85% of students get campus placement, 10-15% of the students get admission for higher education in either India or abroad while 2 – 3 % students qualified for civil and defense services.

5.1.10 Mention the policies of the College for enhancing student participation in sports and extracurricular activities through strategies such as

- additional academic support, flexibility in examinations
- special dietary requirements, sports uniform and materials
- any other

Additional academic support, flexibility in examinations

To ensure the active participation of students in sports and extracurricular activities following support and flexibility is provided by the institute.

- ✓ Attendance exemption (with prior approval) is granted to certain extent..
- ✓ Adjustment of lab work and lab examination is carried out..
- ✓ Extra lectures for topics missed by the students due to the participation in the sports, cultural and other extracurricular events are arranged on working Saturdays or in zero hours.
- ✓ Remedial and make-up classes are conducted

Special dietary requirements, sports uniform and materials

- ✓ The College provides sports uniform and sports kit to the students participating in sports.
- ✓ T.A. and D.A is provided to the students at the time of their participation in tournaments.

Any other

- ✓ The students are encouraged to participate under the guidance of staff Coordinators appointed for each sport.
- ✓ Annual sport competition is organized every year in second semester and winners are honored by certificate and memento.

5.1.11 Does the College have an institutionalized mechanism for placement of its students? What services are provided to help students identify job opportunities, prepare themselves for interview, and develop entrepreneurship skills?

The College has Placement Cell with the prime objective of creating career opportunities in reputed corporate. The Cell is devoted to cater to the needs of the organizations in conducting campus interviews for placements as per its T&P calendar. Interactions with organizations are regularly done for placement requirements. Placement cell also conducts career guidance workshops to the final and pre final year B. Tech and M. Tech students to build up the confidence level and come up with new ideas and innovations.

Its main objectives are:

- ✓ To make SPCE the favorite destination for all multinational companies.
- ✓ To build SPCE brand value in the corporate world

To plan more industry-institution interactions to benefit students and faculty.

- ✓ To train the students on soft skills and technical skills.
- ✓ To introduce video conferencing / seminars, lectures with industry experts and successful alumni to create awareness for Campus to Corporate Transformation.
- ✓ To plan training programs from 1st year to prepare students to meet corporate needs and requirements.

Training and Placement as well as Industry Institute Interaction Cell is set-up in SPCE campus with the assistance of our Management to promote and educate young students to take the benefit of the policies of the government by establishing their own ventures. The cell organizes different activities and events to inculcate Entrepreneurial Spirit among students.

5.1.12 Give the number of students selected during campus interviews by different employers (list the employers and the number of companies who visited the campus annually for the last four years).

Table 5.4 Details of companies visited and number of students placed

Academic Year	No. of Companies Visited	No. of Students Placed	
		UG	PG
2010-11	51	141	10
2011-12	72	160	15
2012-13	56	157	10
2013-14	59	178	18
2014-15	81	241	17
2015-16	69	182	39

Table 5.5 List of Companies Visited During Last Five Academic Years

2015-16	2014-15	2013-14	2012-13	2011-12
EXL Business Process Solutions	EXL Business Process Solutions	Lodha Group	Lodha Group	Mahindra & Mahindra
Lodha Group	Lodha Group	EXL Services	Indus Valley Partners	L & T Ltd
EXL Business Process Solutions	Thyssen Krupp Industrial Solutions (India) Pvt. Ltd.	UHDE India	Mu Sigma	Udhe India Ltd

Lodha Group	L&T Engineering	Mahindra & Mahindra	Shapoorji Pallonji	Lodha Group
L&T Engineering	Aker Solutions	Mu Sigma	IBM	MU Sigma
Aker Solutions	Freight Wings	Oberoi Realty	TCE	Tresvista
	Mu Sigma	L & T Construction	Cognizant	Siemens
Halftick Info Services	L&T Construction	L & T Engineering	L&T InfoTech	TCE
MuSigma	KPMG	Hindusthan Unilever Ltd.	Oracle Financial Services Software	Reliance Industries ltd
UHDE India (ThyssenKrupp Industrial Solutions)	ELGi	Toyo Engineering	Toyo Engineering India	Aker Solutions
ZS Associates	ETech	Tata Consulting Engineering	Capgemini	Infosys
L&T ECC	Aspiring Minds	Cognizant	GeP	Cognizant
KPMG	Hindustan Unilever Ltd.	IBM	Citius Tech	L&T Infotech
Tata Motors	Accenture	Citius Tech	BPCL	Toyo Engineering
Siemens	Jacobs Engineering	Capgemini	ACG	Godrej & Boyce
Infosys	Toyo Engineering India Pvt. Ltd.	NSE Infotech	L&T Engineering	Dar-Al-Handasah
Cognizant	Cognizant	Tata Housing	ACC Concrete Ltd.	Nomura
Accenture	IBM	SAP	Aker Solutions	Hilti
Jacobs Engineering	Infosys	ACG Worldwide	Bajaj Electrical	Mahanager Gas Ltd.
HUL	ACC Concrete Ltd.	KPMG	Bluestar	Mukand Steels
SNC Lavalin	Sanmar Group	Mitsubishi Electric	Kotak Mahindra Old Mutual Life Insurance	IBM

			Ltd	
Thornton Tomasetti	Italian Trade	JP Morgan Investment Banking	Techint	Kalpitaru
Secure Meter	Ariston	Technip KT	Valecha Engineering	Nitco
Avanti Learning	Tata Housing +B50Development Co Ltd	Chemtex	L&T ECC	Kotak Mahindra
MT Educare	Pyramid E&C	Nomura	Reliance Industries Ltd.	Ald Dynatech
Cactus Communications	Cybermarine	Sanmar Group of Companies	Tresvista	Techint
Feedback Infra	GS Engineering	ACC Concrete	Kalpitaru Power Lines Ltd	L&T ECC
Syselec Technologies Pvt Ltd.	Simpex	Leighton Welspun	Ador Welding Ltd	KPMG
Emerson Network Power	VMS Consultant	Dimenxon	Johnson Controls	Blue Star
VMS Consultants	Capgemini	KPMG	Viraj Profiles Ltd	Mott Mcdonald
Alfa Laval	Alfa Laval India Ltd	Kotak Mahindra Life Insurance	Bharat Bijlee	EMCO
Spectrum Techno Consultants	ETA	Fractal Analytics	Damle ThakurDesai	Tenova Hypertherm
Gilbarco Veeder-Root	Cactus	Godrej & Boyce	KPMG	Prysmian
Bluestar	Capacit'e Infraprojects	Zentech India Offshore & Marine Engg. Pvt Ltd	JP Morgan	Linked Middle East
Royal Enfield	Tata Consulting Engineers Ltd.	Reliance Retail Ltd.	Zentech	Sulzer Pumps
L&T Technology	Avanti Learning	Johnson Controls	Mahanagar Gas Ltd.	FLSmidth
Sutherland Global Services	Spectrum Techno Consultants	Pangea3	Oberoi Realty	ICS GROUP
Technip KT	Loyalty Rewards	Avalon Global	VMS	JAYPEE

		Research	Consultants	CEMENT
Tecnimont ICB	Royal Enfield	Vaidik Infrastructure Pvt. Ltd.	HUL	OVERSEAS INFRA LTD.
Xion Multiventures	Mitsubishi Electric Corporation	BrokersPleaseExcuse Pvt. Ltd.	Technip KT India	PRATIBHA Group
Chegg	Technip KT	ELGi Equipment	Owens Corning India	TATA Housing
Kotak Life Insurance	Raheja Universal	Rustomjee Academy For Global Careers	Atos India	VALECHA Engineering
Ahuja Constructions	Kotak Life Insurance	Cybermarine	Sanmar Group of Companies	VMS Consultants
Mukand Steel	Pentair Thermal	Mahangar Gas Ltd.	Pangea3	SEBI
Asian Heart Institute	Saint Gobain	Tata Capital	CyberMarine	Sanghvi Group
Capacite Infraprojects Ltd.	FIC Group	Bluestar	Mumbai Rail Vikas Corp.(MRV C)	Sahani Associates
Mahindra Lifespaces	ATC telecom tower	JSW Steel	Manshu Comtel	Louis Berger
Torrent Power	Reliance Retail Ltd.	Pyramid Consulting Engineers	Data Vectors	MRVC
Kristeel Shinwa	Imaginarium	Torrent Power	Mu Sigma	National Institute of Securities Markets
Oberoi Group	Apar industries	Marine Electricals	Shantilal C. Mehta	Saint Gobain
Efficient Engineering	ACE industries	Savita Oil Technologies Ltd.	MRIPL	Ariston Capital
IMP Powers	Robokid	Cafe Coffee Day	Afcons	United Access Floor Pvt. Ltd
Grofers	Tecnimont ICB	Hettich	Godrej	Voltas
Café Coffee Day	Johnson controls	Techint	Louise Berger	Daimler India

				Commercial Vehicles, Chennai (Mercedes Benz)
Excel Autovista	Oberoi Realty	Siemens	Leighton Welspun Contractors Pvt. Ltd.	NAPC Ltd.
Think & Learn	JSW Steel	PowerLinker	General Motors	Lodha Group
Capgemini	J.P. Morgan	Voltas		VE Commercial Vehicles Ltd., Indore
Sanmar Group	Kalpataru Power Transmission Ltd.	Aker Solutions		iCube Logics
Atkins	Cafe Coffee Day	Motilal Oswal		Micromatic Machine Tools Pvt. Ltd.
Asahi India Glass Ltd	Gherzi Consulting	TBEA Energy India Pvt. Ltd. (Off Campus)		Mahindra & Mahindra
Gmcco Ltd.	Thornton Tomasetti			Stanley Black & Decker
Pharmeasy	ZS Associates			JSW Ispat
Shantilal C. Mehta	Jacobs Engineering Group			ETA
Fintellix	Emco			Dynamic Prestress Projects & Services Pvt. Ltd
Burns & McDonell	Siemens Ltd.			P-Mech Consultant Pvt. Ltd.
Dorsh Consult India	Godrej Properties			Lanco Vidarbha

				Thermal Power Ltd
Vector Projects	Vera Solutions			ACC Concrete
Medica	Omkar Realtors			ACG Worldwide
Saint Gobain	Toshiba			Aditya Birla (Ultatech Cement)
Gammon India	Neosym			Ahuja Construction s
Wasan Group	Hettich			Allseas India Engineering Services Ltd.
Data Metica	Torrent Power			Amazon
	Vodafone			BOSCH
	Daikin Airconditioning India Pvt. Ltd.			Bureau Veritas
	Hewlett Packard			Essar
	Rustomjee Academy			Godrej Properties
	Mahindra Realtors & Infra Pvt. Ltd.			Infotrans
	Reliance Digital			Jaro Education
	Deepak Nitrite			Khodiyar
	Burns & McDonell			Octamec
	Mukand Steel			Prayas
				Pyramid
				Raymond
				STUP Consultancy
				Technkp KT India
				Tiger Steel Engineering
				Universal Consulting

				Wipro VLSI
				Zentech
				Zycus

5.1.13 Does the College have a registered Alumni association? If yes, what are its activities and contributions to the development of the College?

Yes, the college has a registered Alumni association. The Alumni association contributes actively to the welfare of the institution. An institute level alumni meeting is organized once / twice a year by all the departments. Illustrious and prominent alumni are invited to deliver special lectures, motivating the students to go for higher education and to find the means for job opportunities. All the departments have one or two alumni as members of their Subject Board (SB). Their valid suggestions are taken into consideration in designing and updating the curriculum.

5.1.14 Does the College have a student grievance redressal cell? Give details of the nature of grievances reported and how they were redressed.

Yes, the College has a student Grievance Redressal Cell and the grievances are presented to Class teacher, HoD, Deans, and Principal.

Grievances reported

- ✓ More photocopying machines
- ✓ Additional Internet facility
- ✓ Extending the working hours of the library
- ✓ Better catering service from the canteen and Hostel Mess
- ✓ Purified Drinking Water facility
- ✓ A record of the grievances and redressal measures taken are maintained by the Member Secretary of the Grievance Redressal Cell. Grievances mentioned above are redressed by the cell with due representation to the management.

5.1.15 Does the College have a cell and mechanism to resolve issues of sexual harassment?

Yes, the College has a cell to resolve the issues related to sexual harassment chaired by Ladies faculty. There is no room for such issues inside the Campus, but minor problems related to the sexual harassment outside the college are handled by the mentors and staff counselors of the Anti-Sexual Harassment Committee.

Women's Development Cell:

Sardar Patel College of Engineering (SPCE) has adopted the guidelines in Compliance with the Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013 ("**Sexual Harassment Act**") and guidelines laid down by the Supreme Court of India in its 13 August 1997 judgment on the Writ Petition (Criminal) Vishaka vs. State of Rajasthan for prevention and deterrence of sexual harassment in the workplace.

The objectives of the committee are:

- ✓ Prevent discrimination and sexual harassment against women, by promoting gender harmony among students and employees;
- ✓ Deal with cases of discrimination and sexual harassment against women, in a time bound manner, aiming at ensuring support to the victimized and termination of the harassment;
- ✓ Recommend appropriate disciplinary action against the guilty party to the Director.
- ✓ The committee seeks to achieve these goals through:
- ✓ Dissemination of information: Through production, distribution and circulation of printed materials, posters and handouts.
- ✓ Awareness workshops: About sexual harassment for faculty, nonteaching staff and students. The aim is to develop nonthreatening and non-intimidating atmosphere of mutual learning.
- ✓ Counseling: Confidential counseling service is an important service as it provides a safe space to speak about the incident and how it has affected the victim because sexual harassment cases are rarely reported and is a sensitive issue.

5.1.16 Is there an anti-ragging committee? How many instances (if any) have been reported during the last four years and what action has been taken on these?

Yes, there is an anti-ragging committee, as per AICTE Norms

Objectives and Activities:

- ✓ Creating ragging free atmosphere in and outside of the campus.
- ✓ Seniors are expected to maintain self-imposed discipline and restraint. In particular, they must be careful about:
- ✓ Creating cordial relations among students for fulfilling organizational mission and objectives.
- ✓ Creating awareness among students regarding how the self confidence of the individual influences the national interest.
- ✓ The Convener has conducted several interaction meetings with Anti Ragging Committee members and advised them to create a ragging free environment.

- ✓ Anti-ragging squads comprising of faculty members, non-teaching staffs and senior students have been formed to make surprise visits to very sensitive location within the campus.
- ✓ But no instances of such sort have arisen so far. A few minor complaints have been received and suitable action has been promptly taken.

5.1.17 How does the College elicit the cooperation from all stakeholders to ensure overall development of the students considering the curricular and co - curricular activities, research, community orientation, etc.?

The College elicits co-operation from all stakeholders through the following activities.

- ✓ Alumni are invited to motivate the students in curricular and co-curricular activities.
- ✓ Eminent scientists and researchers are invited to guide the students regarding the summer projects and fellowships.
- ✓ Coaching is rendered by experts to the players.
- ✓ Leadership training programs and competitions are conducted by Soft Skill Trainers.
- ✓ External Judges are invited for cultural and sport activities.
- ✓ Expert lectures are arranged for community and social developments.
- ✓ Renowned academicians, industry personnel, professionals, scientists, social activists, journalist and well-wishers of the college are invited to be members of various bodies viz. BOG, Academic Board and other non-statutory bodies.

5.1.18 What special schemes / mechanisms are in place to motivate students for participation in extracurricular activities such as sports, cultural events, etc?

Sports:

- ✓ The college has provided necessary infrastructure that helps the students to inculcate good habit of participating in sport activities and also to develop sportsmanship and friendship.
- ✓ The college has provided necessary facilities for outdoor and indoor games. The outdoor facilities include Cricket, Volleyball, Football, Basketball, Badminton, Hockey, KhoKho, Kabbaddi, Athletics and Tennis, etc while indoor facilities include Badminton, Table Tennis, Caroms, Chess, etc.
- ✓ Annual intramural competitions (annual social gathering) in various games and sports are being conducted for the students.
- ✓ The college participates in zonal and inter zonal sports organised by Mumbai University.
- ✓ The college sport teams and individuals win at zonal, inter zonal levels and other tournaments.
- ✓ Staff advisor is instituted by the College for each and every sport activity.

Cultural Activities:

Every year annual social gathering, Sardar Patel Annual Cultural Extravaganza (SPACE) is organized in February. Generally, a well known personality (actor, poet, social activist etc.) is invited as chief guest. Student's competitions are organized in various cultural activities such as Dance, Drama, Vocals, Traditional day, Rangoli, etc. Majority of students participates in the various events.

5.1.19 How does the College ensure participation of women in „intra“ and „inter“ institutional sports competitions and cultural activities? Provides details of sports and cultural activities in which such efforts were made?

The girl students of the College are motivated to participate in intra-mural, inter-collegiate and other competitions frequently.

5.2 Student Progression

5.2.1 Provide details of programme-wise success rate of the College for the last four years. How does the College compare itself with the performance of other autonomous Colleges / universities (if available)

The programme wise success rate of three UG programs and five PG programs is given in the following tables.

Table 5.6 : Success rate of UG			
Academic Year	Mechanical	Civil	Electrical
2015-16	92.50%	92.50%	98.61%
2014-15	95.95%	91.25%	96.05%
2013-14	97.47%	97.37%	93.83%
2012-13	95.51%	96.00%	96.34%
2011-12	93.67%	96.43%	91.86%
2010-11	97.37%	94.55%	95.24%

It is seen from above table that except for few years and few UG programs, the success rate is more than 90%.

Table 5.6 A: Success rate of PG					
Academic Year	Machine Design	Thermal Engg	Construction Management	Structural Engg.	Power Electronics & Power Engg.
2015-16	--	--	--	--	77.78
2014-15	72.22%	50.00%	15 8.33%	100%	76.47
2013-14	80.00%	75.00%	18 100%	94.44%	--
2012-13	83.33%	87.50%	17 100%	100%	--
2011-12	--	100%	--	100%	--
2010-11	--	100%	--	100%	--

It is seen from the above table that the success rate for all PG programs is 100% for last four years.

5.2.2 Providing the percentage of students progressing to higher education or employment (for the last four batches) highlight the observed trends.

The following table gives the information about student progression either to higher studies or employment.

Table 5.7 Student"s Progression

Mechanical Engineering					
Student Progression	2015-16	2014-15	2013-14	2012-13	2011-12
UG to PG	8.3%	13.3%	25%	26.7%	-
PG to PhD	-	-	5.5%	-	5.5%
Campus Selection	-	100%	100%	100%	-
Electrical Engineering					
UG to PG	17(22.97%)	5(6.02%)	3(3.70%)	12(14.28%)	9(10.58%)
PG to PhD	--	--	--	--	--
Campus Selection	74(100%)	83(100%)	61(79.01%)	42(50%)	56(65.88%)
Civil Engineering					
UG to PG	87.5%	55%	66.67%	72%	69%
PG to PhD	-	11.76%	-	-	-
Campus Selection	68.11%	86.55%	84%	84%	86%

5.2.3 What is the Programme-wise completion rate / dropout rate within the time span as stipulated by the College / University?

Table 5.8 Programme-wise Completion Rate (UG)

Academic Year	Civil	Mechanical	Electrical
2015-16	92.5%	100%	96.61%
2014-15	91.25%	95.95%	96.05%
2013-14	97.36%	97.47%	93.83%
2012-13	96%	97.02%	96.00%
2011-12	94%	93.67%	91.00%

5.2.4 What is the number and percentage of students who appeared/ qualified in examinations like UGC-CSIR-NET, UGC-NET, SLET, ATE / CAT / GRE / TOFEL / GMAT / Central / State services, Defense, Civil Services, etc.

Table 5.9 List of GATE (upto AIR 8000) /CAT/GRE qualified students 2014-15, 2015-16

GATE 2014-2016			
Sr.no.	Candidate Name	Branch	All India Rank
1	Mukul Pathade	Electrical	432
2	Vaibhav Bhosale	Electrical	72
3	Aditya Zade	Electrical	15
4	Anjali Thorat	Electrical	1498
5	Pravin Kore	Mechanical	483
6	Swapnil Shetty	Mechanical	576
7	Shishir Shah	Mechanical	720
8	Pragati Joshi	Mechanical	-
9	Vipul Ahuja	Mechanical	544
10	Bhoga Satishkumar	Civil	4053
11	Bokde Swapnil	Civil	11690
12	Choksi Parth	Civil	6275
13	Choudhary Harish	Civil	2801
14	Ghodake Santosh	Civil	1717
15	Gohil Vijay	Civil	3834
16	Inamdar Masood	Civil	10268
17	Inerkar Kshitij	Civil	6883
18	Lahoti Shashank	Civil	815
19	Oke Ninad	Civil	353
20	Urkudkar Shubham	Civil	11610
21	Yenare Chetan	Civil	353

22	Khandelwal Pritesh	Civil	15300
22	Naik Amey	Civil	5300
23	Jain Pundrik	Civil	--
24	Keni Yutika	Civil	--
25	Mohare Vikas	Civil	--
GATE -2014-15 & 2015-16			
Sr.No	Candidate Name	Branch	All India Rank
1	Mukul Pathade	Electrical	432
2	Vaibhav Bhosale	Electrical	72
3	Aditya Zade	Electrical	15
4	Anjali Thorat	Electrical	1498
5	Pravin Kore	Mechanical	483
6	Swapnil Shetty	Mechanical	576
7	Shishir Shah	Mechanical	720
8	Pragati Joshi	Mechanical	-
9	Vipul Ahuja	Mechanical	544
10	Pravin Kore	Mechanical	483
11	Poojari Dheoraj	Civil	933
12	Gaurav S. Adbale	Civil	6109
13	Ramdev Gohri	Civil	1650
14	Ritu Pal	Civil	11562
15	Shubham Shinde	Civil	2232
16	Shubham Bhevisare	Civil	918
17	Sujay Dhokane	Civil	12919
18	Taikhum Vahanvati	Civil	8283
CAT -2014-15 & 2015-16			
Sr.No	Candidate Name	Branch	Percentile Score
1	Ashna Shukla	Electrical	90
2	Parikshit Deshmukh	Electrical	97
3	Ekta Narvekar	Mechanical	97.08
4	Sanket Kale	Mechanical	99.44
5	Manasa Ramesh	Mechanical	-
GRE -2014-15 & 2015-16			
Sr.No	Candidate Name	Branch	Score out of 340
1	Prakhar Mehta	Electrical	323
2	Krunal Chaudhary	Electrical	312
3	Ajinkya Patil	Electrical	319
4	Renuka Shahare	Electrical	319
5	Nikita Kharat	Electrical	319

6	Akshay Padwal	Mechanical	319
7	Aditya Katkar	Mechanical	324
8	Vrishti Rane	Mechanical	311
9	Neha Shah	Mechanical	321
10	Madhura Yeligeri	Mechanical	325
11	Divya Shah	Mechanical	316
12	Kahaan Shah	Mechanical	318
13	Harsh Mehta	Mechanical	-
14	Saif Sayed	Mechanical	-

**Table 5.10:
Number of Students Qualified in Different Examinations**

Name of the Examination		No. of students appeared for examination			No. of students qualified for the examination		
		Mechanical	Civil	Electrical	Mechanical	Civil	Electrical
2015-16	GRE	5	05	04	5	05	04
	GATE	2	04	03	2	04	03
	CAT	1	02	03	1	02	03
	OTHERS	-	--	--	-	--	--
2014-15	GRE	5	05	--	5	05	--
	GATE	5	04	01	5	04	01
	CAT	2	02	01	2	02	01
	OTHERS	--	--	--		--	--
2013-14	GRE	12			12		
	GATE	3			3		
	CAT	-			-		
	OTHERS	-			-		
2012-13	GRE	2			2		
	GATE	3			3		
	CAT	-			-		
	OTHERS	-			-		
2011-12	GRE	3			3		
	GATE	5			5		
	CAT	2			2		
	OTHERS	-			-		

It may be noted that the information, if the students have not appeared for any of the above five category of examinations (viz. GRE, GMAT/TOFEL, GATE, CAT, others) , corresponding to that row for that year has been omitted.

5.2.5 Provide details regarding the number of Ph.D. / D.Sc. / D.Litt. theses submitted, accepted, resubmitted and rejected in the last four years.

The information regarding the number of Ph.D theses submitted, accepted by the faculty of the College in last four years is given in the following table. It may be noted that being an engineering institute, there is no submission of D. Sc. or D. Litt. thesis.

Table 5.11:
Details of Theses Submitted, Accepted, Resubmitted and Rejected

Academic Year	Ph.D Thesis Submitted	Ph.D Thesis Accepted	Ph.D Thesis Re-Submitted	Ph.D Thesis Rejected
2015-16	2+1*	02	----	----
2014-15	03	03	----	----
2013-14	----	---	----	----
2012-13	02	02	----	----
2011-12	03	03	----	----

* Thesis under review

5.3 Student Participation and Activities

5.3.1 List the range of sports and games, cultural and extracurricular activities available to students. Provide details of participation and program calendar.

As mentioned in Section 5.1.18 and 5.1.19, facilities for outdoor and indoor games are available to students. Gymkhana committee is dedicated to look after these activities. Apart from this, individual faculty also acts as advisors for various sport activities. College has following sports facilities for the students:

Outdoor Games:

- ✓ Cricket ground
- ✓ Hockey Ground
- ✓ Foot-Ball Ground
- ✓ Basket Ball Ground
- ✓ Khokho/ Kabbaddi Ground
- ✓ Lawn Tennis Court
- ✓ Volleyball

Indoor Games:

- ✓ Badminton Court
- ✓ Table Tennis Hall
- ✓ Boxing
- ✓ Carom / Chess
- ✓ Body Gym

Students participate every year at Zonal/Inter-zonal level in the following events

- ✓ Cricket,
- ✓ Hockey,
- ✓ Volley ball,
- ✓ Table Tennis,

- ✓ Lawn Tennis
- ✓ Badminton,
- ✓ Chess,
- ✓ Basketball.

Table 5.12 Activity plan for curricular, co-curricular and extracurricular activities Club/

EESA ACTIVITIES 2015-16			
Sr. No.	EVENT	DATE	Description
1.	Treasure Hunt	9 th August, 2015	The purpose of this event was to increase the interaction between juniors and seniors.
2.	Introductory Seminar For Direct second year (Diploma) Electrical Engineering Students.	28 th August, 2015	The seminar was conducted to give information about grading system of exams in SPCE and other extra-curricular activities in our college.
3.	Basics Of MATLAB: Programming and Simulation	15 July to 17 July 2015.	The students were taught how to use the MATLAB software.
4.	Teachers' Day	4 September 2015	To Felicitate teachers.
5.	Counselling Seminar by Mr. Ambrish Bhatt.	3 September 2015	In this seminar the students were taught to be mentally strong irrespective of the conditions around them, good or bad.
6.	Introductory Seminar For First Year Electrical Engineering Students	30 th July 2015	To make aware first year students.
7.	Felicitation Program of Non-Teaching Staff on Navami	20 th October 2015	--

2014-15			
Sr. No.	EVENT	DATE	Description
1.	Inauguration of the Committee	11 th August, 2014	Inauguration by Mr. Vinod Sadavarte
2.	Seminar on "Importance Of Electrical Engineering"	11 th August, 2014	Seminar By Mr. Vinod Sadavarte
3.	Scientific Calculator	22 nd August, 2014.	Workshop to teach FE

	Workshop		students to use scientific calculator
4.	Treasure Hunt	22 nd August,2014	Fun Event for students
5.	Teacher's Day	5 th September,2014	Teachers Day Celebrations
6.	Guest Lecture on 'Technical Paper Presentation	19 th September,2014	Guest Lecture by Dr. Dhananjay Kalbande
7.	Seminar on “Share market”	27 th September,2014	Seminar was conducted by Ashok Jainani
8.	Technical Workshop on Eagle Software	14 th January,2015	Workshop to teach Eagle software to students
9.	Guest Lecture	12 th February,2015	Guest Lecture by Dr. Ambarish Bhatt
10.	Technical Workshop on 8051 uC	19 th & 21 st February,2015	Students were taught how to use 8051 uC for their embedded system projects
11.	Seminar on “ Challenges of power sector”	23 rd February,2015	Seminar was conducted by Mr. Vijay Sonawane
12.	Technical Quiz	24 th March,2015	A Quiz was conducted for all the students.
13.	Seminar on ‘competitive exams’	20 th March,2015	Seminar was conducted by the final year students Dhruvin Gosar and Aditya Zade
14.	EESA sports	1 st ,2 nd ,3 rd and 4 th April,2015	Sports events were conducted for all the students
15.	Industrial visit	14 th April,2015	A visit was conducted to Siemens, Transformer Factory, for the third year students.
CESA Activities 2012-13			
	Lecture by Dr. V. T. Ganpule (VP, VTG Associates)	11 th Oct 2012	Field problems related to foundations’
2013-14			
	'I-Smoke' doddle and signature campaign organized jointly by CEA and IIT Bombay for Techfest '14 on.	September 4 th and 5 th 2013	Technical Event Campaign
	A lecture by Dr. Yusuf Mehta.	March 21 st , 2013	“Pavement Design in US and Research Projects at Rowan University”
	Lecture by Dr. H. M. Raje (Director, Raje Structural Consultants) .	23 rd August 2013	Civil Engineering Theory and Practice – Mega Structures’ on

	Site visit to Tirumala Habitats –	12 th October 2013	To study Green Building
	Lecture by Mr. Abhijit Nadgouda (Proprietor, iface Consulting) on ‘	23 rd Jan 2014	Importance of Software for Civil Engineers’
	Workshop on STAAD Pro organized for students on	10th February 2014	Software is used for structural design
	Introduction and demonstration of FREW and GRETA Software by Mr. Vishalkumar Addagoori	8 th August 2014	Demonstration of Software
2014-15			
	Site visit to Century Mills construction site, Lower Parel	20 th and 21 st September 2014.	To study construction details and foundations
	Big 5 Construct India Exhibition and	September 2014 and	An international exhibition devoted to Construction materials & Equipment show in Goregaon
	SPECTRA technical fest organized jointly by CEA, EESA and MESA.	March 2015	Technical event conducted for all UG Students
	Big 5 Construct India Exhibition and	September 2015	An international exhibition devoted to Construction materials & Equipment show in Goregaon
MESA ACTIVITIES 2015-16			
01	Teachers Day Celebration	04/09/2016	Small gathering Teachers
02	Academic Stress Management Workshop	15/09/2015	Workshop on Environment
03	Parle G factory visit at Khopoli	03/09/2015	As a part of curriculum industrial visit was organised
04	Workshop on Computational Fluid Dynamics	10-11 October 2015	Workshop on CFD is one of the booming area with upcoming tools.
05	Blood Donation Drive	22/01/2016	Social event to donate the blood
06	Mahindra & Mahindra Industrial visit	03/02/2016	Industrial Visit
07	Seminar on Technical Paper Publishing and Presentation	22/02/2016	Seminar on research Paper
08	One day workshop Reverse Engineering	28/03/2016	An exhibit showing of Latest Technology
09	Expert Talk on innovation in	29/03/2016	expert talk highlighting the

	mumbai suburban local train		nnovations in the Mumbai local design.
10	Volkswagen Pune plant visit	20/04/2016	Industrial visit
11	BARC Visit	28/02/2016	Demo models of various processes
12	AIR INDIA Internship	16/06/2016 to 18/07/2016	One month internship training on Components Overhaul Division and Engine Overhaul Division.
13	DTPS Internship	23-28 May 2016	This internship consists of Plant visit and introductory lectures.

Representation of our students in Inter University, State and National Tournaments:

The details of participation of the students in the zonal sports and their achievements in various sports activities given (Inter University, Inter State, Inter Zonal, National level sports events) in Section 5.1.18 are repeated here in a tabular form.

**Table 5.13: Participation in Inter University, State and National Tournaments
(To be Updated)**

Year	Sports Activity – Sub activity	Level	Achievement
2015-16			
2014-15			
2013-14			
2012-13			
2011-12			

5.3.2 Provide details of the previous four years regarding the achievements of students in co-curricular, extracurricular activities and cultural activities at different levels: University / State / Zonal / National / International, etc.

Table 5.14:
Participation in Co-curricular, Extracurricular and Cultural Activities
(To be Updated)

Year	Event level	class	No. of students	Prize Won
2015-16				
2014-15				
2013-14				
2012-13				
2011-12				

5.3.3 How often does the College collect feedback from students for improving the support services? How is the feedback used?

The institution collects feedback from all the students of the UG and the PG programs once in a semester through a carefully designed questionnaire on various aspects of the academic programs, teaching and learning resources, teaching and evaluation techniques, evaluation of teachers' performance, the rapport between the staff and the students, curricular aspects, physical facilities etc. The consolidated feedback of the students indicates the good practices of the college.

Students council meetings are conducted twice in a semester to discuss the difficulties and suggestions of students related to academics, infrastructure, hostel, mess, co-curricular and extracurricular activities. The requirements by the students such as Vehicle parking, Rest room, Photocopying section, Internet facilities, have been fulfilled by the college over the years.

5.3.4 Does the College have a mechanism to seek and use data and feedback from its graduates and employers, to improve the growth and development of the College?

Yes. Graduate exit survey is designed for graduating engineering students for the purpose of obtaining feedback from students with the objective of improving the courses and the programme. Feedback from the graduates is obtained once in a year on the Graduation Day and is used for the development of the college. Informal feedback is obtained from the employers during Campus Drives. The institute also gets the

feedback during industry visits from the employer. Innovative techniques of teaching, infrastructural facilities such as additional laboratories, central computer facility, Wi-Fi at college and hostel premises, extension of library working hours, renovation of gymkhana, student's activity centre, are the provisions done based on the feedback. The needs and expectations of the students are identified and fulfilled.

5.3.5 How does the College involve and encourage students to publish materials like catalogues, wall magazines, College magazine, and other material? List the major publications/ materials brought out by the students during the previous academic session.

The institution has various publications such as SPECTRA Souvenir, SPCE annual Magazine, etc. which are edited by the teachers and students that create a platform for the students' creative thinking. It focuses on the socio cultural and academic issues. It encourages the students to sharpen their imagination.

5.3.6 Does the College have a Student Council or any similar body? Give details on its constitution, major activities and funding.

Yes. College has a student's council formed as per the guidelines given by Mumbai University (University act 1994). The Student's Council consists of twelve student members besides faculty members as below and is chaired by the Director of the College. as follows. The topper mentioned below is a student having the highest marks/GPA in the recent examination considering the students from all departments of his class.

- ✓ Topper from each class : 4 Nos.
- ✓ Topper S. Y. Diploma : 1 No
- ✓ Topper in M. Tech. : 1 No.
- ✓ Representation from NSS, NCC, Sports : 4 Nos. and Cultural = 4 Members
- ✓ Girls students nominated by Director : 2 Nos.

Table 5.15 Student Council for Academic Year 2014- 15

Sr. No	Name	Designation
1	Lt. Prof. Shyamlee Solanki	Chairman
2	Dr. Hansa Jeswani	Member Secretary
3	Prince Jain	General Secretary
4	Aashay Papnoi	Cultural Secretary
5	Kaustubh Lunawat	Co-Cultural Secretary
6	Dhanashree Parab	Technical Secretary

7	Aditya Surve	Co-Technical Secretary
8	Soukhya Rawool	Magazine Secretary
9	Leenita Gharwade	Sports Secretary
10	Vedika Lahamge	NCC Head
11	Shepali Bambode	Ladies Representative
12	Anushruti Kukreja	Co-Ladies Representative

Table 5.16: Last Six Years Students Office Bearers

Academic Year	Students Council Representative	Annual Social Gathering General Secretary
2015-16	Prince Jain	Prince Jain
2014-15	Akash Sali	Akash Sali
2013-14	Venkatesh Kurminla	Venkatesh Kurminla
2012-13	Saudamini Joshi	Saudamini Joshi
2011-12	Rahul Jain	Rahul Jain
2010-11	Kaustubh Potnis	Kaustubh Potnis

The objectives of forming student council is:

- ✓ To improve academics, co-curricular, cultural and extracurricular activities.
- ✓ To motivate the students for team work.
- ✓ To acquire leadership qualities.
- ✓ To learn event managements.
- ✓ To interaction with college management to resolve the difficulties of the student's in day to day activities.

The activities of student council include:

- ✓ To organize national or university level technical symposium like SPECTRA in each year to motivate students to participate in technical and nontechnical events.
- ✓ To organize the college level event annual social gathering each year which include cultural and sport events.
- ✓ Celebration of Nationally important days like Independence day, Republic day etc., to develop the feeling and sense of nationalism
- ✓ To celebrate Teacher day & Engineers Day.
- ✓ To organize blood donation camp, tree plantation, voter's awareness programs etc.
- ✓ To organize above events, funds are given by institute and some sponsors.

Cultural event includes:

- ✓ Ganesh Festival, Dhandiya, Shiv Jayanti, Essay competition, Quiz, competition, Funny games, Dance, Drama, Fashion show, Vocals and Traditional day

5.3.7 Give details of various academic and administrative bodies that have student representatives on them. Provide details of their activities.

The student's representatives serve in almost all academic and administrative bodies of the college such as departmental board of studies, departmental associations and various clubs, student's council, Anti Ragging Cell, Anti sexual harassment cell, Placement and Career Guidance Cell, NSS, Gymkhana Committee, Library committee Subject board, department advisory board, Magazine committee etc..

Role of Student Representatives

- ✓ Disseminate the information from the college administration to all students.
- ✓ Organize technical, non-technical and social events.
- ✓ Conduct Quiz Competitions on current affairs.
- ✓ Organize programs in NSS.
- ✓ Arrange study tour and Environmental Studies field trip.
- ✓ To maintain conducive and anti-ragging ambience in hostel and college premises.

Any additional information regarding Student Support and Progression, which the institution would like to include.

A lot of student activities are carried out through various student clubs and associations under the guidance of department faculty coordinator and Students. All these curricular, co-curricular and extra-curricular activities help them to learn with fun in a conducive ambience, exhibit their hidden potential and develop technical as well as professional skills besides building confidence and sportive spirit. The mention of various student clubs and associations has appeared at various places in these criteria.

A list of student associations and clubs active at Sardar Patel College of Engineering, Mumbai is given below.

- ✓ CESA (Civil Engineering Students Association)
- ✓ MESA (Mechanical Engineering Students Association)
- ✓ EESA (Electrical Engineering Students Association)
- ✓ SPECTRA
- ✓ ISHRAE
- ✓ SPEAKERS CLUB
- ✓ STUDENTS CLUB
- ✓ HISTORY CLUB
- ✓ SPACE
- ✓ ROBOCON CLUB
- ✓ NCC

CRITERION VI:

GOVERNANCE, LEADERSHIP AND MANAGEMENT

6.1 Institutional Vision and Leadership

6.1.1 Vision of the College:

SARDAR PATEL COLLEGE OF ENGINEERING (SPCE) ASPIRES TO BE AN INSTITUTION OF NATIONAL REPUTE THAT WILL CREATE PROFESSIONALS WITH COMPETENCE AND MOTIVATE RESEARCH FOR THE PROGRESS OF THE NATION.

Mission of the College

- ✓ To impart quality education through time relevant curriculum in academic programs.
- ✓ To enhance career opportunities for students through industry institute interaction & value added courses.
- ✓ To promote excellence by encouraging innovative ideas and lateral thinking.
- ✓ To inculcate sense of discipline and responsibility towards society.

6.1.2 Does the mission statement define the College's distinctive Characteristics in terms of addressing the needs of the society, the students it seeks to serve, College's traditions and value orientations, vision for the future, etc.?

In 1957, the Bharatiya Bhavan conceived the idea of establishing an engineering college in Mumbai. The Engineering Personnel Committee of the Planning Commission had made certain recommendations for the establishment of new engineering colleges and polytechnics, in order to increase the technical manpower in the country. The Government of India accordingly had initiated a liberal policy for setting up private engineering colleges in the states. The proposal of the Bhavan to start an engineering college was favorably received by both the central and state governments.

" Trained men can rebuild a country;. Its only hard work, intelligently directed that produces results".

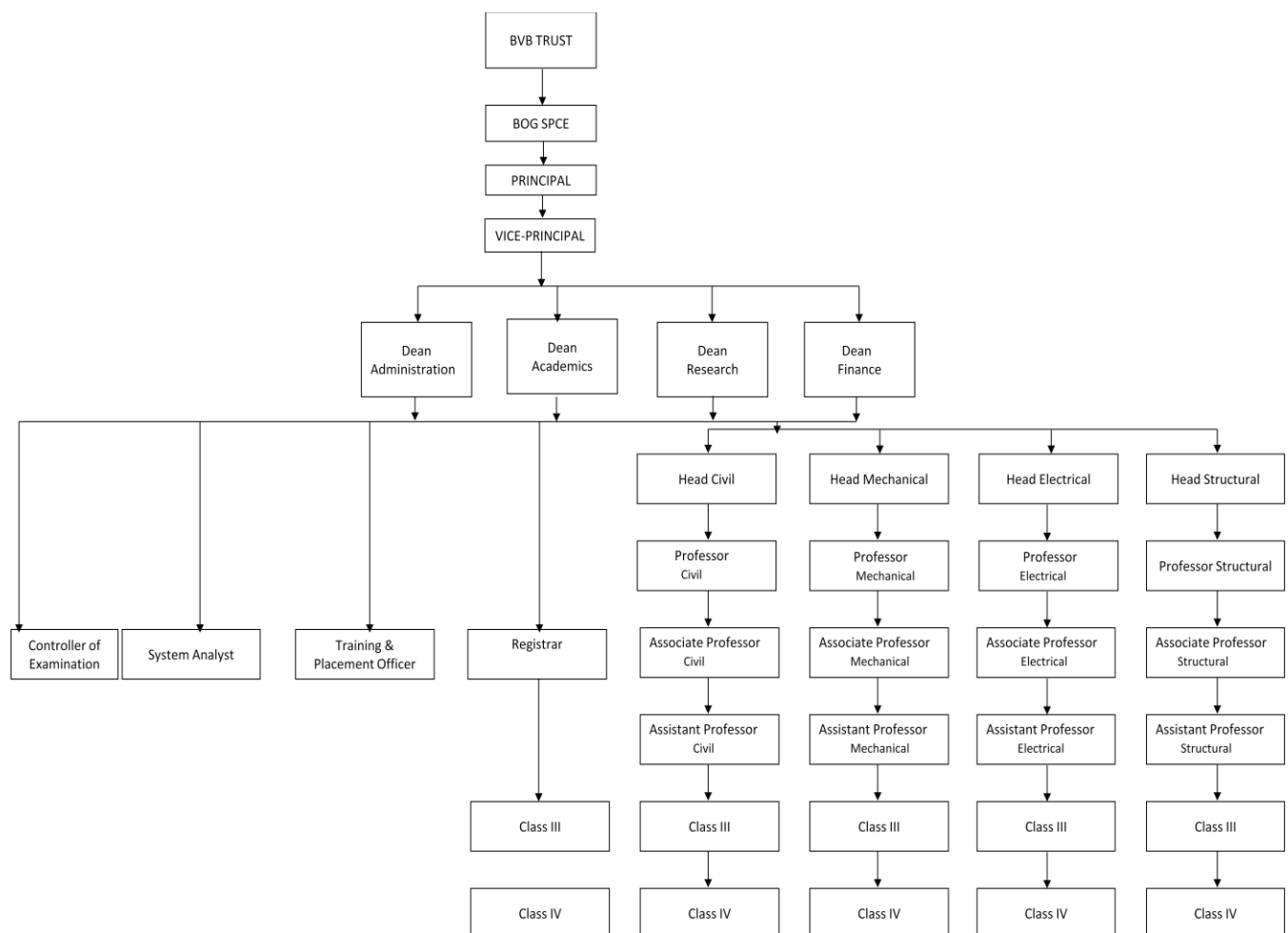
All the programmes in its structure and in its contents are in line with societal and industry needs. The Civil Engineering department of the college is recognized as a QIP center for Ph D research. The college also has various MoUs with industries to enable students to get very good exposure to industries. This enables students to secure their

bright future. Students do participate in competitive events wherein they exhibit their critical thinking and creativity. Students along with faculty have to their credit a few patents and numerous research papers at national and international forums.

6.1.3 How is the leadership involved in

- Ensuring the organization's management system development, implementation and continuous improvement
- Interaction with stakeholders

The hierarchy of the organization is depicted in the figure 6.1 below.



The organization has good decentralization of authorities, and the overall improvements are closely monitored. The administrative, academic and financial policies are designed at the Administrative Council level, however inputs for the policy making are derived from various stake holders namely; internal faculty, staff, students, University, Directorate of Technical Education, Past students, Faculty experts from

other institutes, Industries, Research Organizations etc. All the committees have been constituted as per the UGC guidelines for autonomous colleges. The committee meets regularly and the minutes of the meetings are well recorded. Academic improvements are also audited by internal and external committees. Periodic feedbacks are obtained from students, parents, alumni, employers etc for enabling overall improvement of the college. The college has also framed rules by which academic credit transfer for students has become beneficial to students. On campus placement of the students is usually above 90% every year. Many of the alumni are working on top positions in India and abroad.

*** Reinforcing culture of excellence :**

- ✓ The college deputed faculty in institutes of higher repute for either enabling improve on their academic qualifications or for obtaining wider exposure for best practices.
- ✓ By inviting academic experts from US, the academic revamping, academic practices are refined.
- ✓ Good faculty and a few Industry experts are attracted for teaching learning.
- ✓ Academic monitoring is periodically carried out by internal and external academic experts.
- ✓ The Institute has set up a high class library facility with rich content of R&D literature.
- ✓ Through various students' associations and club services on campus, students are encouraged to develop their personality skills.

Identifying needs and championing organizational development:

Training Need Analysis (TNA) has been carried out to enable improve competency of faculty. Change management Training programmes were participated by many senior faculty members. These programmes were arranged by IIM Indore, IIM Kozikode, IIM Ahmedabad. Many senior faculty members have undergone training and certification programmes on "Certificate programme in Training Skills". One such programme which was attended by many senior faculty members was arranged in Lavasa by Rutgers University (USA). Faculty attended various courses in domain areas, pedagogy, self development etc. The college is planning to have a good MIS system which can be further improved.

6.1.3 Were any of the senior leadership positions of the College vacant for more than a year? If so, indicate the reasons.

Yes. Professor post in Electrical Engineering department as the department did not found suitable candidate for the post.

6.1.4 Does the College ensure that all positions in its various statutory bodies are Filled and conduct of meetings at the stipulated intervals?

Yes. All the meetings take places at stipulated intervals and the records of the meetings are maintained.

6.1.5 Does the College promote a culture of participative management? If yes, Indicate the levels of participative management.

Yes. This college practices participative management at various levels. Various positions, namely, Dean (Academics), Dean (Finance), Dean (R&D), (IIC and TPO), Faculty Advisors for student activities, Coordinators, Chairman (Central Purchase Committee), Electrical Maintenance In-charge, Water Maintenance In-charge, Hostel wardens, Rector, Security In-charge, Canteen In-charge, TEQIP Coordinator, PhD Coordinator, PG coordinator, Heads of Departments etc. positions are available and working is very smooth.

Every week, Institute Development Council (IDC) meets to review various activities including monitoring, and resolves various issues in participative manner.

Matters pertaining to each department are discussed with the staff during department meetings and their collective decisions and opinions are considered in HODs meetings.

6.1.6 Give details of the academic and administrative leadership provided by the University to the College?

The Controller of Exam (CoE)- Mumbai University, The Director, Board of College and University Development (BCUD)- Mumbai University, The Registrar-Mumbai University and The Vice Chancellor-Mumbai University provide the necessary help to the college. The college has involved these authorities of Mumbai University in various committees of the college. Students' degree convocation certificates are printed with the name of the college by the University. The Vice -Chancellor/Registrar remains present at the degree distribution Ceremony at the college campus in May/June to distribute the' graduation grade cards and medals to the students. Ph. D. programme is run as per the university/DTE guidelines as far as admissions, monitoring progress of students, conduct of defense and result declaration are followed well. Approval of roaster and deputing university experts on faculty selection committees for the recruitment purpose is supported by the university from time to time. Controller of Examination (COE), Finance & Accounts Officer, University of Mumbai are active member of Exam Committee & Finance committee of the institute.

6.1.7 How does the College groom the leadership at various levels?

The grooming of leadership is carried out at various levels for various positions of student, faculty and supporting staff categories. At each of these levels, the activities are initially monitored by respective higher authority in setting up of systems. In the later phase, the set systems are sincerely followed. For any modifications, the resolutions are appropriately taken up in respective committees. The departments' head positions are appointed on rotation basis among senior faculty of the respective departments, usually once in a three years. Whereas other positions like Dean, UG/PG Coordinators, PhD/QIP Coordinators etc. are appointed on rotation basis among senior faculty of the respective departments, usually for a period of two years. This helps in grooming leadership at the department level. Other important positions are determined for which we believe on **"thrust by trust"**.

Various training programmes, namely; change management, orientation workshops, soft skill development workshops, yoga workshops etc are carried out. At the end of these programmes efficacy of the programme is determined through analysis of feedback forms. If required, further counseling is provided. This college has produced numerous alumni who are working at senior and key positions in various organizations in India and abroad.

6.1.8 Has the College evolved any strategy for knowledge management? If yes, Give details.

Yes. The college has set up 24 x 7 40 Mbps internet connectivity both through wired and Wi-Fi connection on entire college campus. College is planning to have 80 Mbps another internet line for the hostel purpose. The college holds approximately 350 computers, 50 laptops and 100 printing/ scanning facilities. 60 % of college students use their laptops. Library has provided list of useful links through its subscription to various e-learning sources. The college has maintained separate servers for providing these facilities to faculty, students and researchers. The college maintains Moodle server, data center, blade servers, MIS server through which knowledge management is affected. Students are also given access to the knowledge portals of the companies with whom institute have signed MOU.

6.1.9 How are the following values reflected in various functions of the College?

*** contributing to national development: In line with the vision statement of the college:-**

- ✓ The college runs demand driven curriculum to produce graduates to accept National challenges.
- ✓ Research activities of AICTE, DST, BARC etc., are carried out in the thrust areas of national interest as the institute itself is a Nodal Research Centre under University of Mumbai.

- ✓ College runs Quality Improvement Programme (QIP) of AICTE for Ph D research work.
- ✓ The college is doing innovative projects in collaboration with ICT, Mumbai
- ✓ Conduct of workshops for training National Board of Accreditation (NBA) Trainers /evaluators
- ✓ Consultancy and testing in various departments serve the purpose of providing

Department expertise for national development.

- ✓ National level activities such as conferences, Seminars, workshops as deemed appropriate of national thrust are organized by various departments of the college.

Unnat Maharashtra Abhiyan (UMA) / Unnat Bhatay Abhiyan (UBA)

Institute is active participant in the UMA and UBA through problem solution for Rural Population. SPCE Mumbai is focusing on field public oriented problems by analyzing various day today social and developmental problems in the state of Maharashtra with active participation by faculty and UG/PG/PhD. students. (For example, rural sanitation, toilets, drainage management, drinking water, road development, evaluation and reinforcement of roads, water conservation, fuel and energy, health, drought, etc.). SPCE Mumbai has successfully completed few projects through Ideas, Active Participation with Student engagement and Integration with existing projects. SPCE has introduced one course on Development Engineering for UG (Civil Engineering) Following UG projects/PG Dissertation are completed with the aim to develop methodology to monitor performance of existing regional rural pipe water supply scheme:

- Feasibility analysis for improving the performance of four rural regional piped water supply schemes in Thane district. This includes:
 - Augmentation of Rural Water Supply scheme.
 - Assessment of rural pipe water supply scheme: a case study
 - Monitoring and evaluation of regional rural pipe water supply scheme.
 - Feasibility study and optimization of piped water supply system

*** Fostering global competencies among students:**

Every year, students succeed with good ranks in competitive exams of CAT,MAT,XAT,GRE, TOFEL.

- Alumni of the college help the present students to provide needful inputs to improve on global competencies.
- On campus various training programmes are arranged to improve global competency among students.
- Seminars on higher education in Abroad are regularly organized for the students.
- Almost 15 to 20% of student secure admission for MS in foreign Universities

*** Inculcating a value system among student:**

The college has a very good culture in which the value systems are well respected. The best methodologies of model teaching, counseling, respect to each other etc., are well practiced. Blood donation camp is organized to support the local blood collection centers.

- Bone Marrow testing camp is organized to test the type of bone marrow. This camp also creates a database of such students and make it available to the society to help the needy
- Teachers day organized in respect of teachers
- History club organizes lectures on ancient history
- Speakers club grooms the students to develop their overall personality
- ISHRAE Chapter helps the students to develop expertise in the area of Refrigeration & Air conditioning
- Tree plantation programs are conducted as a part of Go Green initiative
- Alumni provide technical as well as financial help to the current students for participating in technical competitions like SAE/BAJA, SUPRA, ROBOCON, GO CART etc.

*** Promoting use of technology:**

The modernization activities are in line with advancement of technologies. Every year the internet service has been improving.

- Institute has already planned to procure a centralized MIS & an OBE software
- Institute has implemented CCTV Surveillance system campus wide for safety and security of all the stakeholders and property
- The entire campus has been Wi-Fi enabled to provide mobility to the users in accessing various services available on institute's network
- A storage server with VPN based access and username password based authentication is also in place.
- There are more than 15 high end manageable network switches which handle the internal data traffic
- Institute also has gigabyte LAN with fibre optics backbone having more than 200 nodes connected onto it.
- Proprietary/Open Source Software like CATIA, SIMULIA, DELMIA, PLM, MATLAB etc are made available to the students
- Majority of class rooms, seminar halls, committee rooms & library are well equipped with LCD projectors
- The E-mail facility is managed through Google which provides web based email client, built in chat facility, Google docs, Google apps, Google sites and few other facilities as well. Every faculty member is been given e-mail ID on spce.ac.in domain to all the faculty/students
- Employee attendance system has been supported with bio metric attendance.

- Procurement of equipment's is done through e-tendering system.
- Intranet system is strong by which use of Moodle, MIS, e-learning is well promoted. The college carries out a scheme of removal of obsolescence on regular basis.
- Bar code technology already implemented in Library
- Institute is also planning to implement RFID technology in Library
- Online Alumni registration portal system in place
- Feedbacks are taken online through Google forms.

*** Quest for excellence:**

- The college has a state-of-art CNC Laboratory
- Laboratories are modernized with Latest equipments & softwares
- Emerson company had donated the cut section models of Screw compressors for developing proper understanding in Refrigeration & Air conditioning subject
- Institute received best industry institute interaction award
- More than 25 MOUs have been signed with leading industries
- The college curriculum is revamped to make it world class under the guidance from experts from faculty from IITs.
- To promote standardization of processes, institute had developed Manuals & Hand books
- All the activities are carried out as per Academic Calendar schedule
- Regularly students are wining honours & awards in technical competitions. Recently SUPRA team won best "GO GREEN" award
- Lot of Interdisciplinary/Industry projects are being promoted
- Continuing education programs are being organized regularly
- Regular Circulation of Annual reports
- Faculty/Students getting best technical paper award regularly
- Faculty receiving MODROB/DST grants
- College recognized as a Research & QIP centre

6.1.11 Give details of the UGC autonomous review committee's recommendations and its compliance.

Extension of autonomous status of the College has been granted by University Grants Commission vide its letter to Mumbai University, No. F. 22- 1/2016(AC) dated 27th May 2015. A scanned copy of the same is attached in Part A of this SSR giving the profile of the college. The UGC committee has reported its satisfaction on all the academic and administrative working of the college. The suggestions made by the committee through the report are as follows: .

- The institute should complete the NBA Accreditation at the earliest and also apply for the NAAC Accreditation, as per UGC guidelines.
- The vacancy position in teaching faculty and Non- Teaching to be filled.
- The hostel facility for Boys and Girls should be augmented.
- The faculty should be motivated to bring in more research grants from various sources like UGC, AICTE, University, CSIR and DST etc.
- The institution should encourage students for entrepreneurship.
- More interdepartmental and inter-disciplinary courses shall be started.
- Possibility of enhancing the weightage of in-semester examinations may be explored.
- Efforts should be made to prepare innovative curriculum in toto.

The institute has already taken initiative to build the new hostel. Interdepartmental & interdisciplinary electives have been initiated by each department in the subject board. Credit Transfer scheme initiative implemented as a part of innovative curriculum. Some Faculties have started writing research proposals, & some of them have already received the research grants. Received letter from DTE for filling the non-teaching vacant posts. New Hostel plan sanctioned by Management to improve the capacity of no. of quality students.

6.2 Strategy Development and Deployment

6.2.1 Does the College have a Perspective Plan for development? If so, give the aspects considered in development of policy and strategy.

* Yes, the College has a perspective plan for as below:

Teaching and learning:

- Selected faculty members are deputed to IITs for completion of their PhDs. Faculty members are deputed to IITs for attending to various training programmes / conferences.
- It is proposed to depute few faculty members to institutes of national repute for one term for attending to course work of UG / PG programme at the institute.
- Continuing education programs in specific domain areas are regularly organized in collaboration with industries
- This would bring in better understanding of teaching – learning styles of IIT pattern.

*** Research and development:**

- The institute has set aside Rs 40 lacks under TEQIP to provide fund to R&D Projects
- Research advisors & Mentors from IITs are appointed to promote research culture

- Expert Lectures on “How to conduct research” are regularly organized by inviting senior research advisors
- Software tools SPSS, Minitab, MATLAB etc are in place which assist in conducting research
- Faculty/Students are exposed to latest research areas during interaction with Alumni
- BTech students are encouraged to publish paper in reputed international journals

*** Community Services:**

Blood donation & bone marrow testing camps are regularly organized

*** Human resource planning and development:**

- This is annual development activity. For newly recruited faculty members orientation programmes/pedagogy training programmes are arranged.
- Few in-house training programmes are regularly arranged for skill development of employees.

*** Industry interaction:**

There is very good interaction of the departments of the College with industries.

- Many industry experts are invited to deliver guest lectures, interact with students and motivate them to obtain the skills required by industry.
- Many MOUs have been signed with industries for promoting sponsored research projects & provide solution to industry.
- Industrial Visits (IVs) are regularly organized which provides students an opportunity to plan, organize & engage in active learning experiences both inside & outside the class room
- Internship trainings are organized to expose the students to the working environment in the industry
- Corporate training are conducted by the faculties for overall professional development and knowledge transfer
- The institute organizes regular Industry-institute meet to bridge the gap between the two.
- Institute received best industry institute interaction award
- The institute is member of Confederation of Indian industries (CII)
- The institute is also planning to become member of FICCI & ACMA

Internationalization:

Institute had signed MOU with an Australia based company, Leighton for providing extensive training to the students in area of infrastructure development and subsequently the company provided students with placements as well.

Recently the institute has also signed MOU with Wright State University, Ohio for exchange of expertise & knowledge. Few of the Alumni who are working abroad deliver expert lectures in there specialized areas. Institute is also planning to tie up with foreign Universities for student & faculty exchange.

Organization and Governance

The college has a well-framed administrative set up conforming to the norms of the regulatory bodies. *

Administration Setup:

The Chairman, Board of Governance in consultation with other members of the BOG designs policies on administration, finance, HR and Research activities and communicates to the Director for implementation. The Director conveys and monitors these activities in consultation with Institute Development Council (IDC) members. The IDC is composed of following members under the chairmanship of the Principal:

- ✓ Vice Principal
- ✓ Dean (Academics), Dean (Finance), Dean (R&D),and TPO
- ✓ Head of Department (Civil, Mechanical, Electrical)
- ✓ Controller of Exams (CoE)
- ✓ Central Computing Facility I/C/ System Analyst
- ✓ Librarian
- ✓ Hostel Rector
- ✓ TEQIP Coordinator

The Director discusses with HODs and other senior members their opinions regarding implementing various policies. The following statutory committees are functioning in the college to look after the administrative and academic procedures as per the norms stipulated by the University Grants Commission (UGC).

Statutory committees:

- ✓ Board of Governance (BoG)
- ✓ Academic Board
- ✓ Subject Board
- ✓ Finance Committee
- ✓ Institute Development committee (IDC)

Additionally, the college has the following Non-statutory committees.

- Information Committee
- Anti-ragging Committee

- Anti Sexual Harassment Committee
- Disciplinary Committee
- Purchase Committee
- Grievance Redressal Committee
- Library Committee
- Student Activities Committee
- Alumni Committee
- Internal Audit Committee

The above committees are functioning in order to facilitate the successful implementation of autonomy. Each of the committees conducts its meetings and keeps a record of minutes of the meeting. The major decisions taken by various committees are informed to IDC members in weekly meeting.

6.2.3 Specify how many planned proposals were initiated/ implemented, during the last four years. Give details.

Table 6.1 Proposals during the Last Four Years

Title	Department	Status
Setting up CNC Lab	Mechanical	Completed
IT Infrastructure	Institute	Completed
Building & works	Mechanical, Civil, Electrical	Completed
Procurement of equipments	Mechanical, Civil, Electrical	Completed
Raising floor in Workshop	Mechanical	Completed
Hostel & Mess Refurbishment	Hostel	Completed
Mtech. In Power systems & Electronics	Electrical	Completed

6.2.4 Does the College have a formally stated quality policy? How is it designed? driven, deployed and reviewed?

Yes. The quality policy has been designed in consultation with college's stake holders and keeping in mind the Vision and Mission statements of the institute. Internal and external stake holders are monitoring and providing feedback to improve upon the overall academic quality of the College.

6.2.5 How does the College ensure that grievances / complaints are promptly Attended to and resolved effectively? Is there a mechanism to analyze the nature of grievances for promoting better stakeholder-relationship?

The college has set up a separate grievances redressal cell. Through students' Council meetings many complaints are well attended. The lab facility, library reading facility, 24 x 7 internet facility, security facility, medical assistance, Tea-Coffee vending machines etc. have been well

set up. Since many of such student centered facilities are well in place, students are satisfied. However, the redressal cell makes every attempt to solve students' problems.

6.2.6 Does the College have a mechanism for analyzing student feedback on Institutional performance? If yes, what was the institutional response?

Yes, the college has a good mechanism for obtaining (on-line) students' feedback. Though the primary aim of this feedback is to invite students' opinions on teaching imparted by individual faculty, the feedback also allows students to comment on institutional performance in general. The feedbacks are analyzed and actions are initiated accordingly. The teachers whose performance is not reported satisfactory are identified and appropriate counseling is provided.

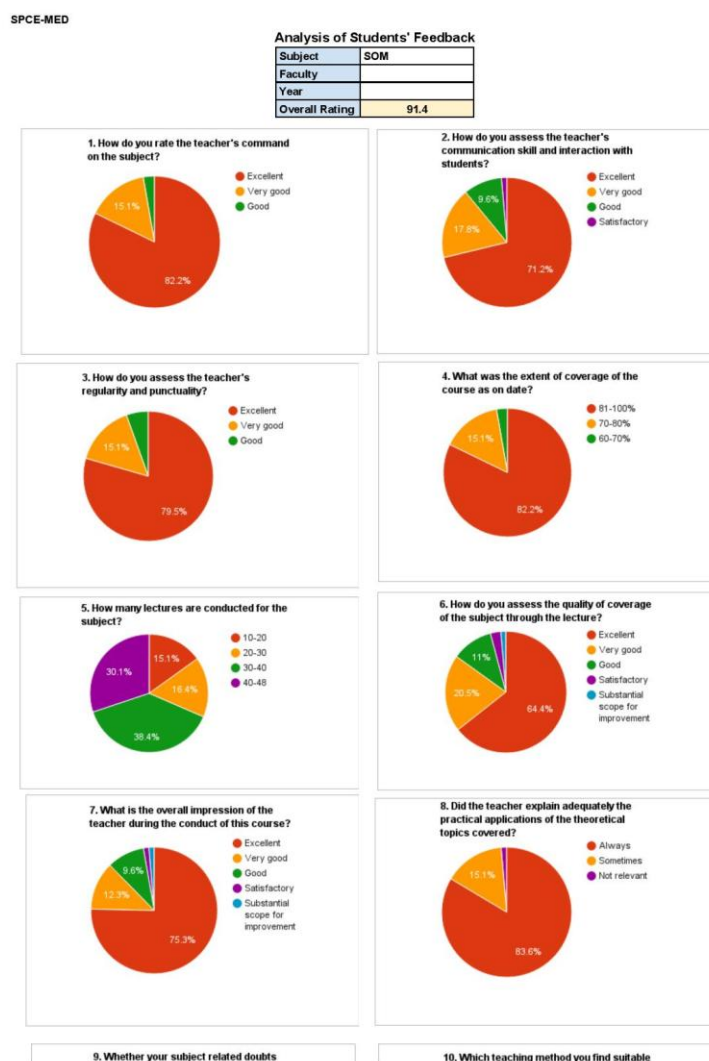


Figure 6.1

6.2.7 In what way the affiliating University helped the College to identify the developmental needs of the College?

University enables, through this scheme, to conduct / organize various training programmes for faculty, students and supporting staff of the college for their technical / soft skill developments. University arranged many orientation and awareness programmes on various topics . University invites the college to participate in various training programmes / seminars.

6.2.8 Does the affiliating university have a functional College Development Council (CDC) or Board of College and University Development (BCUD)? If yes, in what way College is benefitted.

Yes. The university has Board of College and University Development (BCUD). It helps college for resolving affiliation related issues. The college has been selected by AICTE as QIP center for PhD programme in civil engg. department. In order to streamline the admission process of the QIP PhD students, the BCUD had separately called meetings in the university and the QIP admissions, which do not come directly under the university processes, are regularized promptly. In the process of extension of autonomy to this college, BCUD had promptly deputed duly constituted committee for inspection.

6.2.9 How does the College get feedback from non-teaching, teaching, parents and Alumni on its functioning and how it is utilized?

The college organizes regular Annual alumni meet, parents meet & industry meet in every January, collects feedback from them. The feedback form has various questionnaires regarding curriculum, abilities on demonstrating various qualities to apply knowledge to solve real life problems, lifelong learning etc. The feedback is analyzed for enabling revamping curriculum and teaching-learning systems. In response to few feedbacks, every class room is equipped with wall mounted LCD projector. This has helped for effective – teaching learning process

6.2.10 Does the College encourage autonomy to its academic departments and how does it ensure accountability?

Yes. Each of the departments has its Subject board. The decisions of the subject board with minor changes are fitted into the academic structure approved by the college Academic Board. The SB and the faculty in the department select electives to offer to students. Department Academic Coordinator (DAC) under the guidelines of the Dean (Academics) and HoD, monitors academic related issues in the department. The Department is free to adjust its academic calendar to accommodate priority events like arranging guest lectures, arranging field visits, arranging campus interviews etc.

6.2.11 Does the College conduct performance auditing of its various departments?

Yes. The college conducts internal academic audit every year. A format has been created in which the data is collected, analyzed. All the points related to compliance of the audit are communicated to respective HoD and the concerned faculty.

Apart from this Performance audit is also conducted by the institute under TEQIP. For this institute has externally appointed data auditor & performance auditor as well

Through college appointed committee of internal faculty members, the internal audit is effectively carried out. The college also invites academic experts from other autonomous colleges to carry out external academic monitoring. This is done usually, once in two years. This helps to bring in best teaching-learning practices of other institutes so also it helps in revising curriculum contents, if required.

6.3 Faculty Empowerment Strategies

6.3.1 What efforts are made by the College to enhance the professional Development of teaching and non-teaching staff?

The college implements TEQIP. As per the institute development plan (IDP) of TEQIP, skill development programmes for faculty and staff are conducted often. Following types of activities have been conducted/promoted for the faculty and staff to enhance their professional development.

- ✓ Faculty training in core areas.
- ✓ Faculty training in curriculum development.
- ✓ Faculty training for soft skill development
- ✓ Senior faculty training for “Change Management”.
- ✓ Faculty training for advanced software trainings.
- ✓ Refresher programme.
- ✓ Non teaching trainings for technical skill development.
- ✓ Life skill developments for nonteaching staff.
- ✓ Inter personal / team building / leadership programmes for teaching and non teaching members.
- ✓ Paper presentation / conference participation for faculty.

6.3.2 What is the outcome of the review of the Performance Appraisal Reports? List the major decisions.

The performance appraisal is carried out yearly. This helps college administration to identify strengths and weaknesses of individual member of teaching and non-teaching. The process is transparent. The administration accordingly provides counseling, if

required. The internal (Non statutory) promotions are usually carried out based on these reports.

6.3.3 What are the welfare schemes available for teaching and non-teaching staff? What percentage of staff have availed the benefit of such schemes in the last four years?

The college has “Staff Welfare Fund (SWF)”. Through this fund, faculty members have been provided with 50% of travelling expenses or Rs. 50,000/- whichever is less. This is in addition to TEQIP funds budgeted for attending national/ international conferences,

For any emergency or for any event of domestic importance, advance amount to the extent of Rs. 40,000/- is being provided to the staff member. The college provides reimbursement of medical expenses incurred by the employee for his/her for employee and his / her close relatives. As an average, 30% of employees avail the advance / reimbursement facility.

6.3.4 What are the measures taken by the College for attracting and retaining eminent faculty?

As this is a Govt. aided college, the faculty recruitment is strictly carried out as per the state government norms. Retired faculty gets extension for two years. A few retired faculty members have been reappointed from college funds, wherein a faculty appointed at the Professor level gets consolidated salary in the range of Rs 1,00,000/- to 1,25,000/- . Consolidated salary for Associate professor and assistant professor is in the range of Rs 80,000/- to Rs. 1,00,000/- and Rs 40,000/- to 80,000/- respectively. A contractual new faculty, who is yet to retire at the level of Assistant Professor, gets additional increments from college funds, depending upon experience of the faculty.

The college has provided to a faculty, who is carrying out extra work of consultancy and testing through college, gets his / her share of 60% and 50 % respectively. Through TEQIP funds faculty members are supported for registration, travel for attending conferences/workshops/seminars, presenting papers etc. This helps attracting and retaining faculty at this college.

6.3.5 Has the College conducted a gender audit during the last four years? If yes, mention a few salient findings.

Even though no formal gender audit is conducted, the college has a rich tradition of providing equal opportunities to both the genders at its local level. The state government norms are followed in recruitments.

6.3.6 Does the College conduct any gender sensitization programs for its staff?

Anti-sexual Harassment Committee with a senior lady faculty member as chairperson has been formed by the college. Annually, few programmes are organized by the committee for gender sensitization.

6.3.7 What is the impact of the University's UGC-Academic Staff College Programmes in enhancing competencies of the College faculty?

Annually few faculty members are deputed to Academic Staff College for attending program on accreditation in Hyderabad. This helps the faculty members to improve on their competencies. It is found that such faculty members have been improved in their teaching styles.

6.4 Financial Management and Resource Mobilization

6.4.1 What is the institutional mechanism to monitor effective and efficient use of financial resources?

College has appointed Finance Committee & also Dean Finance, as per the UGC guide lines. Generally, the meetings of this committee are scheduled in every quarter. Approval of budget, monitoring of expenditure, purchase of major equipment, analysis of balance sheet, tackling of financial related college level issues, recommendation for appointment of internal and external financial auditors, in-time compliances for financial audit points etc are well handled by Dean Finance & this committee. The committee provides specific guidelines to the Director for effective implementations. At the director's level, a separate central purchase committee has been constituted which meets weekly. Various proposals of purchases are submitted for approval to the Director. The purchase committee prepares analytical comments on comparative statements prepared by the proposer. These recommendations are then approved, with changes if required by the Director. Local financial auditor prepares periodic audit reports for submission to the Director and the Finance Committee.

6.4.2 Does the College have a mechanism for internal and external audit? Give details.

Yes. College appoints internal and external auditors annually. The external auditor is a statutory auditor who carries out half yearly and yearly audit. The internal auditor makes quarterly balance sheets. In addition to this, separate audit is carried out by regional office of the Directorate of Technical Education and by "Audit General (AG)" of the state government. for the grant related fund provided by the state government.

6.4.3 Provide audited income and expenditure statement of academic and Administrative activities of the previous four years.

The audited statement of the previous four years is enclosed as Annexure III.

6.4.4 Have the accounts been audited regularly? What are the major audit objections and how are they complied with?

Yes. As the audit work is done periodically and by various authorities timely. There are usually no major audit objections. A few audit objections may arise because of grant-in-aid formulations, which is very old. The college gets state government grants to the extent of 90% of admissible expenses or annual deficit, whichever is less. This formulation and the fact of non-receipt of grants in-time may raise some objections in the audit report. The compliances are done at the earliest in consultation with the Finance Committee and the Directorate of Technical Education Mumbai.

6.4.5 Narrate the efforts taken by the College for resource mobilization.

College has been well recognized for various testing consultancy assignments in Civil Engineering Department. Resource generation is also done through organizing On-Line examinations for various external agencies. Each of the three departments take active part in organizing continuing education programmes for industry/institute personnel. This adds to resource mobilization.

6.4.6 Is there any provision for the College to maintain the 'corpus fund'? If yes, give details.

Yes. The college has maintained the "Corpus Fund" since 2010-2011. Every year an amount equal to 20% of college's recurring amount is added to the corpus fund. The amount of corpus is few crores as on 2015-16. Reserve fund, four funds IRG is divided into five equal parts and deposited in reserve fund & four funds.

6.5 Internal Quality Assurance System

6.5.1 Does the College conduct an academic audit of its departments? If yes, give details.

Yes. An academic audit of departments is conducted. Internal academic audits are conducted twice in a year at the end of each semester. The internal audit is conducted by an audit committee appointed by Director. Typically internal academic auditors are faculty chosen from various departments of the college. The schedule of audit is declared in advance. The faculties are provided with parameters of academic assessment. The assessment parameters include mapping of course outcomes with programme outcomes, course delivery, in-semester evaluation planned and executed,

Performance of Engaging lectures, Performance of Attendance of students, Counseling, quality of question papers, attainment of course outcomes, and result analysis. The auditors are also provided with evaluation format and it is submitted to Chairman IQAC. Chairman IQAC compiles all the evaluations by the auditors and prepares a consolidated audit report which is sent to all departments. Heads of department take cognizance of the report and necessary corrective measures to address the non-conformities. This is supported by external academic audit. The committee for external academic audit is composed of academic experts from various autonomous colleges. The external academic audit is done usually once in two / three years.

6.5.2 Based on the recommendations of academic audit what specific measures have been taken by the College to improve teaching, learning and evaluation?

Based on recommendations of the academic audit, specific measures taken are as follows:

- ✓ Relative grading system implemented.
- ✓ For the four year programme, total number of credits is limited in the range of 175 to 200.
- ✓ Interdisciplinary & Value added courses are added in the structure.
- ✓ Students' attendance on Moodle is made mandatory and is regularly monitored.
- ✓ Course book maintenance is well organized.
- ✓ Question paper setting included indication for mapping of question to course outcome.
- ✓ Efforts have been taken to motivate students for developing self learning attitude.
- ✓ On-line examination for a few courses introduced.
- ✓ OBE software is procured in line with NBA

6.5.3 Is there a central body within the College to continuously review the teaching Learning process? Give details of its structure, methodologies of operations and outcome?

Yes, the college has Academic Board academic standing committee and Subject Board to monitor teaching learning process. Vice Principal, Deans, HoDs of all departments, are the members of these committees with Principal of the institute chairing the committee. Academic Board meetings are held once in a year, whereas subject board meetings are held as twice in a year. All the decisions taken in subject Board meetings are ratified in academic board meetings. Department Advisory Board meets once in a month, discuss and resolve the issues related to teaching-learning process. The Dean Academics collects academic monitoring reports on weekly basis from all HoDs. Compensatory classes are scheduled for the academics missed out due to the any unavoidable reason. A notice to this effect is circulated. The attendance of students is displayed on students' notice boards. Special cases of less attendance are handled by the Department's Academic Coordinator.

6.5.4 How has IQAC contributed to institutionalizing quality assurance strategies and processes?

The present practice of quality assurance has contributed to plan and execute the policies uniformly throughout the college. All quality assurance strategies are applied uniformly throughout the college. Quality assurance cell plans, and schedules both internal and external academic audits. It also keeps track of accreditation status of various programmes and makes arrangement for application to accreditation agencies. The college has instituted three committees apart from academic monitoring committee, to undertake monitoring of submissions of various issues related with accreditations. NBA committee, NAAC committee, III committee are the three separate committees. The Chairman IQAC coordinates the activities of these committees. IQAC has been framed recently.

6.5.5 Does the IQAC have external members on its committees? If so, mention any significant contribution made by such members.

IQAC has external committee members as per guidelines of NAAC. This has been framed recently. Through e-mails, their opinion of the external IQAC members is sought so far. Based on the opinion, it is proposed to institute a cell called "Learning Factory" in the college premises. This would help students to undertake implementation of interdisciplinary projects for which the cell will remain open for 24 x7.

6.5.6 Has the IQAC conducted any study on the incremental academic growth of students from disadvantaged sections of society?

Institute has implemented "Remedial Coaching" concept. This enables monitoring incremental academic growth of weaker students. The slow learners are identified based on the result analysis every year. The students who perform poorly in the examination are given extra coaching after internal & end semester exam.

Any additional information regarding Governance, Leadership and Management, which the institution would like to include.

The college Director & Management has already come with a plan to build new hostel for the students. Stakeholders have taken keen interest in raising the academic level of this institute to world class. All the members of BOG and stake holders of the institute are continually striving hard to march on the path of meeting the Vision of the institute.

6.5.7 What policies are in place for the periodic review of administrative and academic departments, subject areas, research centers etc.?

The college maintains record of "Self Appraisal Report (SAR)" forms for individual faculty. This is updated annually. Through this form, faculty's administrative, academic; research, attitude and other qualities are recorded. Based on this data, a

faculty is graded on a five point scale. The incremental data for consecutive five years for the individual faculty is considered for promotional policies. There are various council/committees constituted to review the progress of various administrative and academic activities. These include:

- ✓ Board of Governance (BOG)
- ✓ Finance committee
- ✓ Academic Board
- ✓ Internal and external audit committees
- ✓ Research & resource generation committee
- ✓ Subject Board
- ✓ Departmental Advisory Board

Any additional information regarding Governance, Leadership and Management, which the institution would like to include.

Top management of the College is “Board of Governance (BOG)”. The Chairman of the BOG, Mr. Shesha Iyer, is an Academician and has keen interest in raising the academic level of this institute to world class. All the members of BOG and stake holders of the institute are continually striving hard to march on the path of meeting the Vision of the institute. As the college has been established in 1947 and most of its building infrastructure is old, the management is planning to come up with a master plan for the growth of the institute.

CRITERIA VII:

INNOVATION AND BEST PRACTICES

7.1 Environment Consciousness

7.1.1 Does the College conduct a Green Audit of its campus?

Green audit is not conducted formally in the campus. The college has lavish greenery. Many trees & plants are plenty in number. The trees are well maintained. The college has a separate maintenance cell for better housekeeping. The water works cell maintains the water treatment and supply system. All the environmental aspects duly taken care by these cells. The college campus is kept clean and green. A separate maintenance supervisor is available to upkeep the greenery. There is a separate provision for collection of solid waste from various sources. In front of the library building, a very good lawn has been maintained. All the possible efforts are taken to make college campus eco-friendly. Good vegetation cover in college maintains coolness within campus. Provision of water in college campus is with municipal water good quality potable water. The water quality is regularly analyzed for ensuring the quality of supplied water at the institute.

7.1.2 What are the initiatives taken by the College to make the campus ecofriendly?

*** Energy conservation**

For energy conservation the following measures are taken:

- ✓ Every year tree plantation program is conducted on the occasion of World Environment day
- ✓ lights use CFL at most of the places.
- ✓ At few places, LED lighting has been put up.
- ✓ Use of Air conditioning unit is made only when essential.
- ✓ Centralized water purification unit has been set up for providing potable water.
- ✓ Due to lavish greenery on campus, air circulation is very good. This demands very few rooms only with air conditioning.

*** Use of renewable energy**

For use of renewable energy the following measures are taken:

- ✓ Planned to install Solar street light units in the institute campus.
- ✓ Planned to install Solar water heater panels in hostel premises.

*** Water harvesting**

All roof water is collected through ducts and various sump systems have been set up to store the water. The entire roof of main building has been used for this purpose. Harvested rainwater is used for groundwater recharge. This has significantly resulted in increasing water levels , even during summer season. With this, the college is self-reliant for its water usage. This was not the situation prior to setting the roof water harvesting system.

*** Efforts for Carbon Neutrality:**

The campus has enough natural greenery. The age-old big trees are along the borders of the campus. The green waste is centrally dumped and usually not burnt. This helps naturally to achieve carbon neutrality.

*** Plantation:**

Open area by the side of hostel is planted and regularly maintained by watering, cuttings etc. Plantation of trees is a regular phenomenon. Some departments have system of welcoming guests with a plant which is then planted in the college campus. World environment day is celebrated every year with tree plantations.

*** Hazardous Waste Management:**

Paper waste is regularly sold to outside agency. The answer sheets are shredded and sold to licensed purchaser. College does not produce much of hazardous waste. If any such waste is found, it is destroyed under strict human supervision. There are no hazardous wastes generated in college except in laboratories like Chemistry and Environmental Engineering. Adequate exhaust provisions are made in these laboratories to drive out acid fumes.

*** e-waste Management:**

Electronic and computer accessories which are declared “Obsolete” are sold through auction to a licensed vendor on periodical basis. College also has a scheme by which new equipment are purchased under old buy back scheme.

*** Any Other:**

Chemical fire extinguishers are charged periodically from outside licensed agency. The college has taken initiatives to make the system paperless. E-documentation policy is promoted in administrative office and other departments. The papers are reused for printing.

7.2 Innovations

7.2.1 Provide details of innovations introduced during the last four years which have created a positive impact on the functioning of the College.

*** Few of innovations introduced are as under:**

- ✓ College applied for TEQIP grants. The TEQIP grant of Rs 10 crore was released to this college. So far the performance of the college has been rated as 10 out of 10 as far as execution of the TEQIP project is concerned.
- ✓ College has invited Many experts from industries to enable revamping of academic structure. A series of workshops have been organized with the Leading OEM experts as resource persons to fine tune the academics.
- ✓ College provided pedagogical and advanced training to faculty to keep them abreast with changing times.
- ✓ College deputed a few faculty abroad to enable them present their publication at the foreign university. This helped faculty to get better exposure to foreign institutes.
- ✓ Few faculty members have applied for patents.
- ✓ College has set up advanced research lab in Embedded Systems.
- ✓ Relative grading system is effectively implemented.
- ✓ Sponsored project concept is successfully implemented.
- ✓ A state-of-art college library has been set up and the library research holdings are enriched.
- ✓ MIS for students' activities has been set up.
- ✓ Internet bandwidth is increased to 40 Mbps. Wi-Fi internet access on 24 x 7 is assured on campus.
- ✓ College lab facilities are kept open for extended hours. The labs are allowed to be managed by students in off college working hours. This helped student to also improve on their organizational skills.
- ✓ Library is equipped well with e-journals. These journals are made available on intranet on campus for easy access.
- ✓ In order to attract readers to visit library physically, best article read scheme has been implemented. Through this scheme, a reader in the library reads latest arrivals in library and prepares a note on his important readings. The best read notes are felicitated.

- ✓ All class rooms are equipped with CD. Interactive LCD screens are also installed in few class rooms.
- ✓ On hostel side the mess facilities are modernized.
- ✓ Administrative responsibilities to senior faculty in the capacity of Dean, Controller of Examination and Officer on special duty have been assigned.
- ✓ DAB, SB, AB, IQAC have been constituted for better control and monitoring of academic and administrative systems.

7.3 Best Practices

7.3.1 Give details of any two best practices which have contributed to better academic and administrative functioning of the College.

Following two on-going best practices have been listed:

Best Practice I:

1. Title of the Practice:

Decentralization of autonomy to departments

2. Objective of the Practice:

To result into efficient and effective academic and administrative functioning.

Intended outcome:

The department will demonstrate smooth functioning of administration in delivering and monitoring academics, decentralization of power & decision making

3. The Context

Within the institute's approved academic structure, the department is authorized to make academic changes to for the better learning of the students. The Department Academic Coordinator, in consultation with Head of respective department (HoD), is empowered to make suitable changes (concurrent with the institute policies) in delivery and monitoring of academics. HoD is the Chairman of Subject Board (SB) and he is authorized to call upon meetings of SB to seek further guidance.

4. The Practice

Subject Board meetings are arranged every semester to present the performance of various classes of the programmes, present and discuss the future plans, inform about changes in institute policy regarding curriculum etc. The suggestions by external

Academic Board (AB) members are well taken into account and recorded in the form of minutes of the meeting. The genuine points of the discussions are brought to the notice of the Director and Academic Board. The AICTE guidelines are taken as reference in formulating the curriculum.

The academics related issues like visit to industries, declaration of student defaulters, students' academic monitoring and administration related issues like faculty duty leaves etc are handled within the department. Department also arranges remedial coaching to slow learners for curricular/co-curricular activities. Department also encourages students for out-reach services to society. Students' organizations in the department are very active and they conduct various events under the supervision of department's faculty.

Usually no difficulties are experienced either by faculty or students in the department. Constraint / limitations are experienced when budget of the activity exceeds the pre-determined limit. With a special permission from the Principal, the activities are then worked out. Sometimes, the programmes clash with academics. HoDs are empowered to adjust/compensate for the loss of academics appropriately, for which various committees are formed.

5. Evidence of Success

It is seen over last few years that the practice as above has provided satisfaction to all stake holders of the department. If the department's proposal is marginally exceeding the institute's guidelines, the Principal has provided approval to the proposal on case to case basis. This has helped the department to improve on academic results, MoU s with Industries, research output of the department and providing trainings to students and faculty on need based issues. Through the balance sheet, it is also evident that, over the years, the budget allocation of the departments has gone up. Increased publications, students awards etc. minutes of committee meetings & documentation have also been streamlined.

6. Problems Encountered and Resources

With the system practiced so far, following problems have been identified:
Regular faculty strength in the department is not enough. Many of the contractual faculty in the department is young and new to the department. More faculty with enough experience need to be recruited.

- ✓ The building structure is old and enough well furnished infrastructural facilities do not exist. It needs modernization of building infrastructure.
- ✓ There is a limit on recurring expenses for each of the department. It needs more budget on recurring items from the college.
- ✓ Any change is not easily accepted. It needs appropriate orientation to its stake holders.

Best Practice II:

1. Title of the Practice:

Transparency in answer book evaluation system.

2. Objective of the Practice:

To introduce error free and effective evaluation system.

Intended outcome:

The transparent evaluation system is intended to bring tolerance free evaluation system. Every student, the major stake holder of the system gets right to know the evaluation scheme and the evaluation executed of his/her answer book. This practice helps to bring complete transparency in the evaluation process and satisfaction.

3. The Context

Examination section is centre of focus in any institute for the students, the major stake holder of the system. The good practices of this section cultivates towards building effectiveness and efficiency of the institute. Answer book evaluation is an important activities being executed through exam section and is important from student's point of view as well. Best practices mentioned as transparent evaluation system is introduced with an objective to satisfy the major stake holders and to increase effectiveness and efficiency of the system. Hence with an aim to bring the transparency in the evaluation system, the evaluation scheme and evaluated answer books are shown to each of the students.

4. The Practice

To execute the theme of transparent evaluation system. The calendar is prepared well in advance at the starting of the academic year) showing the detailed examination events. Along with answer book assessment slot, the dates to show the answer books to the students are exclusively displayed in the examination calendar. This practice gives the complete execution road map to the students. On the date of answer books to shown to the students, the assessed answer books are distributed to the students along with the scheme of the evaluation. Students review the evaluated answer books in light of scheme of evaluation. If any deviation is observed in the assessment, the student discuss his/her query with the Course instructor in accordance with the proposed scheme of evaluation. If the query is justified, and leads to the change of marks then the

same change is noted with the reason for change of marks in the grievance form. The student's acknowledgment on the change of marks is taken by his signature on the grievance form. This grievance form is then submitted to the Head of the Department for review and approval. The approved grievance form is then submitted to the exam section for change of marks statement.

5. Evidence of Success

The record of the grievance form shows that most of the student review the answer books on schedule dates. Further after completion of the grievance, no complaints are received from the students. This indicates the success of the process. Further, prior to this practice, the distribution of the photocopy to student and revaluation from external examiner was implemented. The process was open loop and students were not able to review the assessment done even after revaluation. Hence, total satisfaction was not attained in the process and process was not leading towards transparency, also it incurred lots of inventory (photocopying of answer books etc.). With the implementation of the new practice, any discrepancy in paper evaluation is cross checked with the synoptic prepared by the course teacher. Hence, the process is closed loop and leads to error free evaluation system thus explicitly covers the quality improvement in the assessment and hence is an efficient practice. Further, the process do not incurr into utilization of inventory (photocopy of the answer books) as that of the previous practice. Hence, the process is effective too.

1. Problems Encountered and Resources

While implementing some of the faculty members were hesitant, as this was happening for the first time, & also little low in confidence specially the newly joined ones. So this problem was tackled by providing motivation from the senior staff which boosted their confidence level & also an experienced faculty was provided while showing the answersheets to the student for the initial evaluations.

*** Any additional information regarding Innovations and Best Practices, which the College would like to include.**

Following best practices would be taken up for implementation in near future.

- It is proposed that many of the courses would be evaluated on-line. This would result into faster result declarations.
- The college would like to conduct summer term to enable slow learner to improve and fast learner to take up few courses of his interest.
- Credit transfer policy will be affected between this college and few IITs and other autonomous colleges.
- ✓ Institute would like to setup Centre of Excellance

- ✓ Twinning programme in association with foreign universities will be taken up.
- ✓ Faculty sabbatical will be implemented.
- ✓ Incubation center would be set up.