



# **SELF STUDY REPORT**

**FOR**

**1<sup>st</sup> CYCLE OF ACCREDITATION**

## **PILLAI HOC COLLEGE OF ENGINEERING AND TECHNOLOGY**

**PILLAI HOC COLLEGE OF ENGINEERING AND TECHNOLOGY, RASAYANI,  
TAL. KHALAPUR, DIST RAIGAD, MAHARASHTRA**

**410207**

**[www.phcet.ac.in](http://www.phcet.ac.in)**

**Submitted To**

**NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL**

**BANGALORE**

**(Draft)**

# 1. EXECUTIVE SUMMARY

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## 1.1 INTRODUCTION

*Pillai HOC College of Engineering and Technology (PHCET), Rasayani, Raigad (Dist.), Maharashtra* was established in 2009 by Mahatma Education Society (MES). MES is a pioneer in establishing and managing institutions in various streams of education viz., Schools, Colleges of Arts, Science and Commerce, Teacher Education, Architecture, Management, Engineering, and other streams.

The Mahatma Education Society (MES) was established in 1970 with the great vision –‘**Education for All**’ and the belief that ‘**No Religion is Greater Than Truth**’ and a commitment to contribute one’s share and play one’s part in the development and progress of the Indian society.

MES is a consummate social entrepreneur and has established academic institutions where nobody has dared. *PHCET is the most illustrious example –a high quality engineering and technology institution to reach the unreached.*

MES is considered a thought leader, and the 48 years of glorious service through 48 academic institutions of high repute is evidence of its steadily adapting and scaling up according to the needs of the times. MES is earnest about digital and technical empowerment of generations of youth and established PHCET.

PHCET, affiliated to University of Mumbai, offers BE degree programs in seven areas of engineering. Computer, Electronics and Telecommunication, Information Technology and Mechanical Engineering (2009-10), Civil (2010-11), Automobile (2013-14), and Electrical Engineering (2014-15) were started.

PHCET has been on a continuous growth trajectory with ME programs in Computer and Mechanical Engineering (2012-13), Electronics and Telecommunication (2013-14), and Construction Engineering and Management (2014-15), and Ph.D. programs in Computer and Civil Engineering (2015-16), all in eight years. In 2017-18 Computer and Mechanical Engineering departments were accredited by NBA.

PHCET serves the needs of the community around it as many of the students come from economically backward strata. Some are first generation learners from underprivileged communities. The only way forward for the youth that PHCET serves is through education – most of all a technical education. A good quality technical education today is a sure shot way for any aspiring young person to pull oneself out of poverty and morass. PHCET fulfils this need admirably.

### **Vision**

*Pillai HOC College of Engineering and Technology will admit, educate and train for engineering graduation a diverse population of students who are academically prepared to benefit from the Institute’s infrastructure and experience to become responsible professionals in a technical arena. It will further attract, develop and retain, dedicated, excellent teachers, scholars and professionals from diverse backgrounds whose work gives them visibility beyond the classroom and who are committed to making a significant difference in the lives of their students and the community.”*

The vision has been to help build the India of the future by creating responsible and productive citizens. Service to the community is the raison d'être of Pillai HOC College of Engineering and Technology (PHCET), Rasayani. To realize the noble vision and to fulfil its commitment to the community PHCET has been striving in manifold ways as articulated in the mission and goals.

From its inception 'Quality consciousness' in all its actions and dealings has been the uppermost concern and thrust, and its motto:

Vidya Karmasu Kaushalam (Knowledge is Excellence at Work) articulates it.

Excellence has hands and legs, and a thinking mind too. PHCET has realized this and is unambiguous in its commitment. "**When students leave PHCET they should be confident and competent engineers determined to meet the challenges that may come in their professional and personal lives and take risks as appropriate, and have a 'WINNER'S ATTITUDE' - no matter what background they come from when they enter PHCET.**"

The core values, PHCET abides by are derived from the vision and the efforts to realize it, are

- Accountability and service to all stakeholders
- Integrity and fairness in all practices
- Instil innovation and creativity
- Inclusiveness and care for the marginalized
- Resilience and sustainability
- Striving for quality and excellence in all actions
- Thought leadership and quality consciousness

While striving to be an exemplary institution imparting high quality education, PHCET also aspires to be an institution of international importance, following

The PHCET Way:

*Create more than consume*

*Learn more than teach*

*Listen more than speak*

*Practice more than preach*

*Thus PHCET exemplifies and tries to realize its vision.*

## **Mission**

### **Mission:**

"To develop professional engineers with respect for the environment, and make them responsible citizens in technical development both from an Indian and global perspective. This objective is fulfilled through quality education, practical training and interaction with industries and social organizations."

The mission of PHCET is to train generations of youth as responsible citizens and exemplary engineers. This is realized through well-defined and realizable goals both short term and long term. The long term goals are created to realize the vision of PHCET as well as to fulfil its aspiration to be an institution of international importance. The long term goals are given below.

### Goals:

PHCET pursues its mission by contributing, inculcating and practicing

- **Academic Leadership** - by imparting high quality engineering education partnering with other institutions and industry
- **Corporate Leadership** - by creating a pipeline of Engineers to occupy positions of leadership and responsibility in business and industry both Indian and global
- **Entrepreneurial Leadership** - by encouraging the students and alumni to become entrepreneurs by providing infrastructure and incubation facilities
- **Governance and Societal Leadership** - by helping increase number of technical people taking up positions of public service and governance that can influence policy and decision making with workshops, SDP (Student Development Programs) and consulting.

PHCET is motivated by its small success of supporting *five entrepreneurs* in five years since the first batch graduated in 2013-14. It has been striving to be true to its vision and core values and pushing the envelope of academic offerings by starting Masters and Ph. D programs.

The short term goals have been spelt out through semester and year plans. They concentrate on academic objectives and attainments, and also curricular and extra-curricular achievements.

Program Educational Objectives (PEOs), Program Outcomes (POs), Program Specific Outcomes (PSOs) and Course Outcomes (Cos), etc., of various programs, and the practice of nearly fifty student centric methods evolved over the years and other noteworthy practices are intended to encourage students to be thorough professionals and reliable and responsible citizens who would be respected at work, at home, their community and the society at large.

## 1.2 Strength, Weakness, Opportunity and Challenges(SWOC)

### Institutional Strength

1. PHCET is established with a clear vision by MES which has been in management of educational institutions for nearly half a century.
2. The support and leadership of the Trustees have helped PHCET establish itself on firm footing in seven branches of engineering.
3. The trustees are very highly educated with high academic qualifications from some of the best Universities in the world and understand, value, and respect education.
4. The trustees are hands-on and are involved in the operations and development of PHCET and are very considerate to needy students and employees.
5. PHCET has the advantage of being in the Industrial belt of Rasayani and Taloja and is only sixty Kms from Mumbai the city of opportunities and enjoys the good will of the Industry.
6. Hostel accommodation, proximity to some of the most enviable surroundings and access to

interdisciplinary activities on the campus.

7. Computer and Mechanical Engineering departments are accredited by NBA in 2017-18.
8. In pursuit of quality, PHCET has taken several measures to build quality consciousness in students, faculty and administration.
9. Nearly fifty student-centric methods are created to enhance the learning experience and to provide wholesome education. Some of the methods have become best practices.
10. Faculty presentations, training for public speaking, opportunities for acquiring certifications, and participation in community activities, etc. provide healthy work environment.
11. Common facilities, steady availability of learning resources and other amenities shared across departments.
12. The young faculty of PHCET has energy, enthusiasm and goodwill, and can be groomed to make it a powerhouse.
13. Certification of IELTS and MOOCs courses for faculty and students, and other initiatives for building people.
14. The availability of additional built up area for expansion is a great strength of PHCET.
15. Research Innovation and Incubation Centre with 3-D printers, and other sophisticated resources, a Component library where the students and faculty work on innovative ideas.
16. A Light Board Studio for creating e-learning resources.

PHCET has numerous advantages and strengths, and the effort is to channelize them for productive purposes and for adding quality and value to its service.

### **Institutional Weakness**

1. The student community is mostly from the rural District of Raigad and generally have poor academic background. Some, being first generation learners need special attention, counselling and mentoring from very senior faculty.
2. The research output is not adequate and needs to be augmented.
3. PHCET needs to organize national and international conferences and undertake large research projects that can give experience and strengthen the faculty.
4. PHCET, despite the facilities, has not been able to attract the best of talent students - as it is located in an underdeveloped region.
5. Travel is a discomfort for many despite the bus service.

### **Institutional Opportunity**

1. The opportunities for development of PHCET will increase as residential complexes are increasing in its proximity.
2. PHCET has opportunities to become an autonomous technical college or a deemed to be University, and has to progress towards it as it would give academic freedom to offer a variety of future proof programs.
3. The young faculty can do Ph.D. in areas of specializations that the world and the Industry require.
4. The availability of very high quality built up area and infrastructure is opportunity for PHCET to dream big.
5. Proximity to one of the largest International Airports being built in the vicinity will provide ample opportunities for employment and help students become entrepreneurial.

## **Institutional Challenge**

The following are the challenges.

1. The strength of PHCET is its human capital, and 'Building Quality Consciousness' is the pivot around which PHCET is pursuing everything in its academic and social life.

However, driving a major change maker like this for all stakeholders is a challenge.

1. The slow realization of the goal to make all stakeholders own the 'Brand PHCET' and participate in its endeavour to become a quality institution of international importance.
2. Bridging the gap between aspirations and performance of the students.
3. There is also a gap between the learner's needs, the needs of the industry and what is taught. Bridging this gap and equipping the learner to face the global changes and challenges is challenging.
4. The Language barrier - the inability to communicate in the language of business - English fluently, hampers the opportunities of students in placement.
5. The hurdles for Industry-Institute interaction and placements on campus are increasing as the number of graduates is increasing though there is considerable improvement in the last four years. The effort is to have 100% placement on campus.

## **1.3 CRITERIA WISE SUMMARY**

### **Curricular Aspects**

PHCET implements the curriculum of the University of Mumbai but ensures innovation in delivery. The curriculum planning and delivery are diligent with the preparation of the lesson plan and concept inventory, adapting Bloom's Taxonomy focussing on Information, Understanding, Application and Synthesis.

Each department has a well-articulated vision and mission and academic activities align with them. Each semester the faculty reviews the COs and prepares the teaching plan that is validated by the domain coordinator. The COs is mapped with POs and PSOs.

Academic flexibility in terms of CBCS was introduced in 2016-17 for all programs. Contemporary elective courses have always been offered and students take advantage of electives with high job potential.

Short programs, in-house STTP that students are also permitted to attend, workshops, seminars, orientation programs, conferences, internship, Industrial visits, etc., are regularly organized for curricular enrichment. During last five years the number of students participating in such programs has steadily increased. Students are also encouraged to take subject related Certificate programs from MOOCs.

While academically conscientious, PHCET is sensitive to gender equity, minorities, under-privileged and reserved classes of students and staff. The students are consistently reminded to be conscious of our common heritage - the environment - and its sustainability through banners and posters, inspirational talks, participation in activities such as Save the River Rally, etc.

Regular feedback is taken from students, parents, alumni and employers, and discussed during class teacher-students meet, PTM, alumni meet, etc., and actions are taken.

### **Teaching-learning and Evaluation**

PHCET during the period under review has an average enrolment of 58.62% of sanctioned intake in every department, 64% of the seats for the reserved categories filled. Needs of differently-able students are met. Almost every Indian mother-tongue is spoken on the campus.

Learning and performance of students are assessed periodically and various remedial measures are adopted to support slow learners. Advanced learners are encouraged to do challenging assignments and projects. Implementation of nearly fifty student-centric methods is achieved through continuous engagement of students and faculty and has been a very rewarding experience for both. Each student has a mentor and each faculty mentors 15 to 18 students and has transformed the lives of several students.

PHCET adheres to the academic calendar and uses it effectively for CIE. Formal and statutory processes exist to deal with examination related grievances and involve all related stakeholders. It is time-bound and efficient.

The average teaching experience of full time teachers is 7 years and 100% of faculty use ICT. The time-table is based on the academic calendar. Faculty members create lesson plan and concept inventory for effective teaching.

A sample method for measuring, and the level of attainment of POs, PSOs and COs are available on the website. Average passing percentage of final year students is 95 % during last five years. A formal student satisfaction survey is conducted twice a semester and the results are communicated to the faculty and appropriate actions are taken.

### **Research, Innovations and Extension**

PHCET has a research culture and has exclusive infrastructure to support it. Thirteen applications filed is a proof of innovation ecosystem fostered. It is evinced by the research grants of Rs. 6.37 Lakhs received from the University of Mumbai.

Faculty and students created a 'Finger Print Scanning Software' and a 'Bomb Diffuser Robot' for Navi Mumbai Police in 2016-17. Exercycle for mobile and laptop charging and an 'Automated Stamping Machine' are also designed and developed.

Students are provided with resources such as computers, working space and financial help for establishing start-ups. Publishing the research and creating new linkages for collaboration are actively pursued. Faculty and students have published 672 papers in peer reviewed journals and national and international conferences. PHCET has MoU with nine leading organizations of repute for academic and research collaboration.

PHCET involves in extension activities to enthuse school students for STEM education. Every year students from neighbouring towns and villages spend a day in PHCET learning Robotics and participate in a competition. Last two years 1500 students from sixteen schools participated.

The MES Mapathon 2017, the first Mapathon in India with support from Mapbox Inc., HOTSOM and Missing Maps Organization was a collaborative project of students and faculty. Ten were from other universities. The team mapped areas affected by the South Sudanese civil war creating maps for 3862 buildings and 365 Kms of roads for refugee camps in Sudan and Uganda.

*Purposeful and diverse activities make the environment vibrant.*

### **Infrastructure and Learning Resources**

PHCET has a built up area of about 22503 sq.mt. comprising of class rooms, tutorial rooms, laboratories and applied laboratories, research, innovation and incubation centre, additional rooms, facilities and amenities, and area for expansion. Amenities such as gymnasium, indoor sports, canteen, first aid room, rest rooms, seminar and display halls, conference halls, state-of-the-art auditorium, Govt. of India sponsored SAI training centre, facility for multiple sports and games are also available.

A modern hostel with desirable amenities, steady electricity supply ensured with *two* 250 KVA stand by Generators, inverters and UPS systems, bus facility for students and staff from various locations and 45000 Sq Ft of gardens add to convenience and ambience.

PHCET Library is a true learning resource centre managed with Koha LMS that supports more than 23,000 books, 113 national and international journals in print, 6533 e-journals, 2094 e-books and NPTEL videos. A digital library with 25 computers and a computer centre with 60 computers for browsing give access to IIT Spoken Tutorials, MOOCs and other digital resources. The institute has a student – computer ratio of 4:1 on LAN with internet speed of 100 Mbps with high security, and necessary S/W both proprietary and open source.

There are systems, procedures and policies for access, maintenance and support of resources. These ensure continued and on demand availability of physical, academic, support facilities by in-house and outsourced teams. The expenditures are budgeted.

All learning resources, infrastructural facilities and amenities are compliant with statutory and regulatory requirements.

### **Student Support and Progression**

In last five years besides social welfare schemes, 5015 students received scholarships under government schemes. 392 were awarded freeship by MES for excellence in academics. Additionally, in 2017-18, twenty girls received scholarships from Bombay Community Public Trust (BCPT) and thirty final year students received scholarship from FramjeeCawasjee Institute.

Guidance for competitive examinations and career counselling are conducted regularly by experts and 2444 and 2647 respectively have taken advantage.

Bridge courses and remedial teaching help weaker students. *Lab based Communication skills training is part of the curriculum.* Study workshop helps improve performance. Internships and Industrial visits give exposure to the world of work. 971 have benefitted from internships and 2755 students benefitted from skill development courses run by PHCET.

Yoga and Meditation training was conducted by 'Heartfulness', a NGO, and meditation is practised for five minutes during every lecture.

Committees for Grievance Redressal, Prevention of sexual harassment, Anti-Ragging, etc., monitor and support the students.

TPO organizes regular sessions to prepare the students for interviews and aptitude tests in a dedicated slot in time table. 280 students have been placed in five years.

The Entrepreneurship Cell has helped five become entrepreneurs. 17 have pursued higher education from previous graduating batch.

PHCET has a very dynamic students' council that champions various causes and lead curricular, co-curricular and extracurricular activities.

Students participate in technical, cultural and sports events at inter-collegiate and inter-university; and at nationals in Robocon, SAE SUPRA and Go-Karting. PHCET hosts a cultural fest EUFORIA and a tech fest Tech-Euforia every year.

PHCET Alumni Association is vibrant and meets annually since 2013-14.

### **Governance, Leadership and Management**

The leadership of PHCET makes relentless efforts for the realization of its vision to train its graduates to become responsible professionals, and attract and retain faculty who are committed to making a significant difference in the lives of their students and community. The commitment of PHCET unambiguously articulates it. It has policies to support participation and career growth of the faculty.

The steady growth and expansion of the college since its inception in 2009-10 in quantity and quality is a clear illustration of the strategic planning and its implementation. There are 23 committees that help manage various academic, administrative, co-curricular and extra-curricular activities that make PHCET a vibrant academic institution.

The recruitment and employment policies comply with the stipulations of various regulating authorities. Faculty and non-teaching staff development programs are conducted regularly and annual appraisals are a norm for both teaching and non-teaching staff. Faculty is encouraged to attend various development programs.

Financial discipline and probity are some of the most inviolable institutional values of PHCET and are protected by both internal and external audits. Social welfare department of the Govt. of Maharashtra, University of Mumbai, and AICTE are some of the public and governmental agencies that are the source for funding for the students and for carrying out research projects. Non-governmental funding is through projects, consultancy, and scholarships for students, and also from the MES trust. Pursuing consistent quality in all aspects is a practice, and is supported by IQAC.

### **Institutional Values and Best Practices**

PHCET fosters gender equity in admission and employment with 20% students, 50% faculty, 30% non-teaching staff, 100% class IV staff being women. Committees such as Anti sexual harassment, Grievance redressal, and Anti-ragging and Internal Complaints Committee pay special attention to the needs of women of PHCET. A number of programs such as workshop on self-defence (Suraksha), celebration of Women's day, etc. are organized to uphold gender sensitivity.

Environmental sustainability in terms of waste management, rain water harvesting, students and staff using public transport, pedestrian friendly internal roads, green landscaping, natural light in classrooms, conservation of use of light and water, etc. are part of the discipline, design and architecture.

Divyangjan friendly facilities such as lifts, interconnection of buildings at every floor, ramps and rails, rest rooms, scribes for examinations, support for students who are unwell and injured, facility for left hand writing during examinations, etc. are integral to PHCET. Its commitment to its stakeholders, practice of inclusion, professional ethics and code of conduct are inviolable.

Several practices worth emulating have evolved and three representative practices are Study Workshops, Project Based Learning (PBL), and Concept Inventory (CI).

PHCET is committed to STEM education. 'ROBOGRIA', – a Robotic workshop enthruses school students for science and technology education. Students from neighbouring towns and villages spend a day in PHCET learning Robotics and participate in a Robotic competition. In the last two years sixteen schools have participated with around 1500 students. This is a unique contribution and value addition PHCET makes to the community.

## 2. PROFILE

### 2.1 BASIC INFORMATION

Name and Address of the College	
Name	PILLAI HOC COLLEGE OF ENGINEERING AND TECHNOLOGY
Address	Pillai HOC College of Engineering and Technology, Rasayani, Tal. Khalapur, Dist Raigad, Maharashtra
City	Rasayani Tal Khalapur Dist Raigad
State	Maharashtra
Pin	410207
Website	<a href="http://www.phcet.ac.in">www.phcet.ac.in</a>

Contacts for Communication					
Designation	Name	Telephone with STD Code	Mobile	Fax	Email
Professor	Mathew Joseph T.	02192-252067	9867968096	02192-254151	mathewjoseph@mes.ac.in
Principal	Chelpa Lingam	02192-252005	9029011353	02192-250066	principal.phcet@mes.ac.in

Status of the Institution	
Institution Status	Private and Self Financing

Type of Institution	
By Gender	Co-education
By Shift	Regular

<b>Recognized Minority institution</b>	
If it is a recognized minority institution	Yes <a href="#">Minority approval certificate.pdf</a>
If Yes, Specify minority status	
Religious	
Linguistic	Malayalam
Any Other	

<b>Establishment Details</b>				
Date of establishment of the college	01-01-2009			
<b>University to which the college is affiliated/ or which governs the college (if it is a constituent college)</b>				
<b>State</b>	<b>University name</b>	<b>Document</b>		
Maharashtra	University of Mumbai	<a href="#">View Document</a>		
<b>Details of UGC recognition</b>				
<b>Under Section</b>	<b>Date</b>	<b>View Document</b>		
2f of UGC				
12B of UGC				
<b>Details of recognition/approval by stationary/regulatory bodies like AICTE,NCTE,MCI,DCI,PCI,RCI etc(other than UGC)</b>				
<b>Statutory Regulatory Authority</b>	<b>Recognition/Approval details Institution/Department programme</b>	<b>Day,Month and year(dd-mm-yyyy)</b>	<b>Validity in months</b>	<b>Remarks</b>
AICTE	<a href="#">View Document</a>	10-04-2018	12	

<b>Details of autonomy</b>	
Does the affiliating university Act provide for conferment of autonomy (as recognized by the UGC), on its affiliated colleges?	No

<b>Recognitions</b>	
Is the College recognized by UGC as a College with Potential for Excellence(CPE)?	No
Is the College recognized for its performance by any other governmental agency?	No

<b>Location and Area of Campus</b>				
<b>Campus Type</b>	<b>Address</b>	<b>Location*</b>	<b>Campus Area in Acres</b>	<b>Built up Area in sq.mts.</b>
Main campus area	Pillai HOC College of Engineering and Technology, Rasayani, Tal. Khalapur, Dist Raigad, Maharashtra	Urban	14.23	22503.74

## 2.2 ACADEMIC INFORMATION

<b>Details of Programmes Offered by the College (Give Data for Current Academic year)</b>						
<b>Programme Level</b>	<b>Name of Programme/Course</b>	<b>Duration in Months</b>	<b>Entry Qualification</b>	<b>Medium of Instruction</b>	<b>Sanctioned Strength</b>	<b>No.of Students Admitted</b>
UG	BE,Automobile Engineering	48	H.S.C. and GATE	English	60	21
UG	BE,Civil Engineering	48	H.S.C. and GATE	English	120	63
UG	BE,Computer Engineering	48	H.S.C. and GATE	English	90	77
UG	BE,Computer Engineering	36	Diploma	English	60	60
UG	BE,Electrical Engineering	48	H.S.C.and GATE	English	60	30
UG	BE,Information Technology	48	H.S.C. and GATE	English	60	51

UG	BE,Mechanical Engineering	48	H.S.C. and GATE	English	120	82
UG	BE,Mechanical Engineering	48	H.S.C. and GATE	English	60	18
UG	BE,Electronics And Telecommunication Engineering	48	H.S.C. and GATE	English	60	13
PG	ME,Civil Engineering	48	B.E. and GATE	English	24	22
PG	ME,Computer Engineering	24	B.E. OR B.TECH	English	18	3
PG	ME,Mechanical Engineering	24	B.E. OR B.TECH	English	18	3
PG	ME,Electronics And Telecommunication Engineering	24	B.E. OR B.TECH	English	18	2
Doctoral (Ph.D)	PhD or DPhil,Civil Engineering	36	M.E. OR M.TECH	English	10	0
Doctoral (Ph.D)	PhD or DPhil,Computer Engineering	36	M.E. OR M.TECH	English	10	0

### Position Details of Faculty & Staff in the College

<b>Teaching Faculty</b>												
	<b>Professor</b>				<b>Associate Professor</b>				<b>Assistant Professor</b>			
	Male	Female	Others	Total	Male	Female	Others	Total	Male	Female	Others	Total
Sanctioned by the UGC /University State Government	12				15				117			
Recruited	10	2	0	12	5	10	0	15	62	55	0	117
Yet to Recruit	0				0				0			
Sanctioned by the Management/Society or Other Authorized Bodies	0				0				16			
Recruited	0	0	0	0	0	0	0	0	4	12	0	16
Yet to Recruit	0				0				0			

<b>Non-Teaching Staff</b>				
	<b>Male</b>	<b>Female</b>	<b>Others</b>	<b>Total</b>
Sanctioned by the UGC /University State Government				0
Recruited	0	0	0	0
Yet to Recruit				0
Sanctioned by the Management/Society or Other Authorized Bodies				28
Recruited	20	8	0	28
Yet to Recruit				0

<b>Technical Staff</b>				
	<b>Male</b>	<b>Female</b>	<b>Others</b>	<b>Total</b>
Sanctioned by the UGC /University State Government				0
Recruited	0	0	0	0
Yet to Recruit				0
Sanctioned by the Management/Society or Other Authorized Bodies				37
Recruited	31	6	0	37
Yet to Recruit				0

**Qualification Details of the Teaching Staff**

<b>Permanent Teachers</b>										
<b>Highest Qualification</b>	<b>Professor</b>			<b>Associate Professor</b>			<b>Assistant Professor</b>			<b>Total</b>
	Male	Female	Others	Male	Female	Others	Male	Female	Others	
D.sc/D.Litt.	0	0	0	0	0	0	0	0	0	0
Ph.D.	10	2	0	1	3	0	0	0	0	16
M.Phil.	0	0	0	0	0	0	0	1	0	1
PG	0	0	0	4	7	0	62	54	0	127

<b>Temporary Teachers</b>										
<b>Highest Qualification</b>	<b>Professor</b>			<b>Associate Professor</b>			<b>Assistant Professor</b>			<b>Total</b>
	Male	Female	Others	Male	Female	Others	Male	Female	Others	
D.sc/D.Litt.	0	0	0	0	0	0	0	0	0	0
Ph.D.	0	0	0	0	0	0	0	0	0	0
M.Phil.	0	0	0	0	0	0	0	0	0	0
PG	0	0	0	0	0	0	4	12	0	16

<b>Part Time Teachers</b>										
<b>Highest Qualification</b>	<b>Professor</b>			<b>Associate Professor</b>			<b>Assistant Professor</b>			<b>Total</b>
	Male	Female	Others	Male	Female	Others	Male	Female	Others	
D.sc/D.Litt.	0	0	0	0	0	0	0	0	0	0
Ph.D.	0	0	0	0	0	0	0	0	0	0
M.Phil.	0	0	0	0	0	0	0	0	0	0
PG	0	0	0	0	0	0	0	0	0	0

<b>Details of Visting/Guest Faculties</b>					
<b>Number of Visiting/Guest Faculty engaged with the college?</b>	<b>Male</b>		<b>Female</b>		<b>Total</b>
	7		5		12

**Provide the Following Details of Students Enrolled in the College During the Current Academic Year**

Programme		From the State Where College is Located	From Other States of India	NRI Students	Foreign Students	Total
Doctoral (Ph.D)	Male	0	0	0	0	0
	Female	0	0	0	0	0
	Others	0	0	0	0	0
UG	Male	2159	24	0	0	2183
	Female	456	2	0	0	458
	Others	0	0	0	0	0
PG	Male	36	1	0	0	37
	Female	35	0	0	0	35
	Others	0	0	0	0	0

**Provide the Following Details of Students admitted to the College During the last four Academic Years**

<b>Programme</b>		<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>
SC	Male	117	96	92	58
	Female	39	33	15	31
	Others	0	0	0	0
ST	Male	3	2	1	0
	Female	0	0	1	0
	Others	0	0	0	0
OBC	Male	572	471	317	209
	Female	201	172	89	92
	Others	0	0	0	0
General	Male	1539	1546	1505	1661
	Female	335	418	527	539
	Others	0	0	0	0
Others	Male	108	91	192	54
	Female	29	32	37	8
	Others	0	0	0	0
<b>Total</b>		<b>2943</b>	<b>2861</b>	<b>2776</b>	<b>2652</b>

### 3. Extended Profile

#### 3.1 Program

Number of courses offered by the institution across all programs during the last five years

Response: 847

File Description	Document
Institutional Data in Prescribed Format	<a href="#">View Document</a>

Number of programs offered year-wise for last five years

2017-18	2016-17	2015-16	2014-15	2013-14
13	13	13	12	9

#### 3.2 Students

Number of students year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
2943	2861	2776	2652	2148

File Description	Document
Institutional Data in Prescribed Format	<a href="#">View Document</a>

Number of seats earmarked for reserved category as per GOI/State Govt rule year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
402	432	462	462	378

File Description	Document
Institutional data in prescribed format	<a href="#">View Document</a>

Number of outgoing / final year students year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
768	699	503	416	332

File Description	Document
Institutional Data in Prescribed Format	<a href="#">View Document</a>

### 3.3 Teachers

#### Number of full time teachers year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
206	212	227	188	151

File Description	Document
Institutional Data in Prescribed Format	<a href="#">View Document</a>

#### Number of sanctioned posts year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
220	220	208	180	144

File Description	Document
Institutional data in prescribed format	<a href="#">View Document</a>

### 3.4 Institution

#### Total number of classrooms and seminar halls

**Response: 59**

#### Total Expenditure excluding salary year-wise during the last five years ( INR in Lakhs)

2017-18	2016-17	2015-16	2014-15	2013-14
928.966	1163.69	1295.79	925.44	1156.33

#### Number of computers

**Response: 750**

## 4. Quality Indicator Framework(QIF)

### Criterion 1 - Curricular Aspects

#### 1.1 Curricular Planning and Implementation

##### 1.1.1 The institution ensures effective curriculum delivery through a well planned and documented process

##### Response:

PHCET, considering the strengths and the limitations of its student stakeholders has been innovating continuously for curriculum delivery. The first task is the creation and adherence to a well-planned academic calendar that incorporates the stipulations and academic calendar of the University of Mumbai.

All programmes in the College have well defined Educational Objectives (PEOs) and have a well-documented process for disseminating to the students at various levels. Teaching learning processes are carried out with careful planning and effective delivery of Lecture / Practical/ Tutorial as per time table, academic calendar and semester plan.

The curriculum planning and delivery are diligent and involve preparation of the lesson plan and concept inventory and adapting Bloom's Taxonomy focusing initially on Information, Understanding, Application and Synthesis and subsequently addressing all the levels of Bloom's Taxonomy.

Each department has its own well-articulated vision and mission and the academic activities of the department align with them. The Program Educational Objectives (PEOs) are defined by the respective departments. The faculty pays specific attention to Program Specific Outcomes (PSOs), Program Outcomes (POs), and PEOs. The department analyses the curriculum and identifies the gaps, and strives to make it practical and industry oriented through laboratory practical, Project Based Learning (PBL), talks by Industry experts, internship, etc.

The academic calendar of PHCET for the semester is prepared well in advance. Based on this, each department prepares its own academic calendar incorporating all activities and events that it plans to organize.

Course allocation is done two months before the end of a semester, well in advance to ensure that the faculty gets enough time to prepare for the ensuing semester. Each faculty prepares course outcomes based on the course objectives and outcomes prescribed by the academic council of the University of Mumbai and a course file comprising of academic calendar, teaching plan, concept inventory, question bank, University question papers of previous semesters, module-wise notes, list of experiments, etc., and is reviewed by the domain co-coordinator.

Every department pays special attention to enhance the breadth of awareness of students by offering content beyond the syllabus in the form of field visits, participation in technical competitions, conferences, inter university research competition such as Avishkar, etc.

PHCET practises nearly fifty student-centric methods to enhance the learning experience of the students. Each faculty chooses the methods that suit the course one teaches.

Learning of four years is distributed to create a clear and logical progression from building up basics and foundation courses to advanced courses. The objective is to create core competency in the chosen domain.

Assessment and evaluation of the learning achieved is the best indicator of the effectiveness of the teaching learning process. PHCET uses various methods of evaluation to assess the rigour of its methods and practices as well as to understand the learning that happens.

Course outcomes are mapped to program outcomes. This helps to understand the effectiveness of curriculum delivery.

File Description	Document
Any additional information	<a href="#">View Document</a>
Link for Additional Information	<a href="#">View Document</a>

### 1.1.2 Number of certificate/diploma program introduced during the last five years

**Response:** 20

#### 1.1.2.1 Number of certificate/diploma programs introduced year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
13	1	6	0	0

File Description	Document
Minutes of relevant Academic Council/BOS meetings	<a href="#">View Document</a>
Details of the certificate/Diploma programs	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

### 1.1.3 Percentage of participation of full time teachers in various bodies of the Universities/ Autonomous Colleges/ Other Colleges, such as BoS and Academic Council during the last five years

**Response:** 54.37

1.1.3.1 Number of teachers participating in various bodies of the Institution, such as BoS and Academic Council year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
25	26	23	16	17

File Description	Document
Details of participation of teachers in various bodies	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

## 1.2 Academic Flexibility

<p><b>1.2.1 Percentage of new Courses introduced out of the total number of courses across all Programs offered during last five years</b></p> <p><b>Response: 15.58</b></p>	
<p>1.2.1.1 How many new courses are introduced within the last five years</p> <p>Response: 132</p>	
File Description	Document
Minutes of relevant Academic Council/BOS meetings.	<a href="#">View Document</a>
Details of the new courses introduced	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

<p><b>1.2.2 Percentage of programs in which Choice Based Credit System (CBCS)/Elective course system has been implemented</b></p> <p><b>Response: 100</b></p>	
<p>1.2.2.1 Number of programs in which CBCS/ Elective course system implemented.</p> <p>Response: 13</p>	
File Description	Document
Name of the programs in which CBCS is implemented	<a href="#">View Document</a>
Minutes of relevant Academic Council/BOS meetings.	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

**1.2.3 Average percentage of students enrolled in subject related Certificate/ Diploma programs/Add-on programs as against the total number of students during the last five years****Response:** 54.94

1.2.3.1 Number of students enrolled in subject related Certificate or Diploma or Add-on programs year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
2350	2183	1470	1165	465

File Description	Document
Details of the students enrolled in Subjects related to certificate/Diploma/Add-on programs	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

**1.3 Curriculum Enrichment****1.3.1 Institution integrates cross- cutting issues relevant to Gender, Environment and Sustainability, Human Values and Professional Ethics into the Curriculum****Response:**

PHCET fosters gender equity in admission and employment with 23% students, 50% faculty, 27% non-teaching staff, 100% supporting staff being women. While academically conscientious, PHCET is sensitive to gender equity, minorities, under-privileged and reserved classes of students and staff and has systems and processes to meet challenges. Fairness and equity are sacrosanct for PHCET.

PHCET commitment to its stakeholders, practice of inclusion and professional ethics and code of conduct are inviolable. An active 'Women's Grievance Redressal Cell' and 'Anti-ragging Committee' pay special attention to the needs of women (faculty, staff and students) of PHCET and function as per the norms laid down by various statutory bodies such as the Supreme Court of India, UGC, AICTE, etc.

'Women's Grievance Redressal Cell' was established in 2012 with well-defined the objectives and the mandate to organize workshops on issues affecting women in general, to sensitize students and staff about gender equality on the campus and liaison with statutory bodies in case any such requirement.

Several activities are carried out for sensitizing students and staff the last being, 'Women Safety Training Program - Suraksha', held on Nov 12, 2016. 'Women's Day' is celebrated every year in PHCET.

New entrants, both faculty and students are informed about the existence of 'Women's Grievance Redressal Cell' and available processes and procedures to express ones grievance in a legitimate manner

and recourse to action. PHCET also publicizes the institutional policy and commitment to protect women staff and girl students, with banners and posters and sensitizes the campus about gender equality. PHCET discusses the policy with all new recruits and existing employees and students.

The present curriculum involves the environment and sustainability courses such as Environmental Studies, Environmental Engineering, Industrial Waste Treatment, Solid Waste Management, and Business Communication Skills, etc.

Environmental Studies is included at the first year for all specializations and Business Communication and Professional Ethics are included at third year curriculum.

Final year students are encouraged to choose the elective subject related to the environment and sustainability. Students are also encouraged to take projects which address cross cutting issues viz., green energy, biogas management, water management, etc. Students are motivated to take part in various inter-collegiate events such as Inter and Intra collegiate project competitions, National level project exhibition and poster presentations which address diverse social and environmental issues.

Discussions and workshops are held on a regular basis to develop sensitivity towards societal issues, moral values and professional ethics. Students and faculty participate in events such as 'Save River Rally' held on Sept 16, 2017, 'Traffic-Mitra program' held on July 19, 2016, 'Awareness Program on Cashless Transaction on Jan 16, 2016 and many others. Such events help students understand their social responsibility and create respect for environment.

A well-planned feedback system addresses all stakeholders. Inputs from students, parents, alumni and employers are documented. Some issues are discussed during occasions such as class-teacher - students meet, parent-teacher meet, alumni meet, etc. and actions are initiated.

File Description	Document
Any Additional Information	<a href="#">View Document</a>
Link for Additional Information	<a href="#">View Document</a>

### 1.3.2 Number of value added courses imparting transferable and life skills offered during the last five years

**Response:** 40

#### 1.3.2.1 Number of value-added courses imparting transferable and life skills offered during the last five years

**Response:** 40

File Description	Document
Details of the value-added courses imparting transferable and life skills	<a href="#">View Document</a>
Brochure or any other document relating to value added courses.	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

<b>1.3.3 Percentage of students undertaking field projects / internships</b>	
<b>Response:</b> 90.35	
1.3.3.1 Number of students undertaking field projects or internships	
Response: 2659	
File Description	Document
List of students enrolled	<a href="#">View Document</a>
Institutional data in prescribed format	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

## 1.4 Feedback System

<b>1.4.1 Structured feedback received from 1) Students, 2)Teachers, 3)Employers, 4)Alumni and 5)Parents for design and review of syllabus-Semester wise/ year-wise</b>	
<b>A.Any 4 of the above</b>	
<b>B.Any 3 of the above</b>	
<b>C. Any 2 of the above</b>	
<b>D. Any 1 of the above</b>	
<b>Response:</b> A.Any 4 of the above	
File Description	Document
Any additional information	<a href="#">View Document</a>
Action taken report of the Institution on feedback report as stated in the minutes of the Governing Council, Syndicate, Board of Management	<a href="#">View Document</a>
URL for stakeholder feedback report	<a href="#">View Document</a>

**1.4.2 Feedback processes of the institution may be classified as follows:**

**A. Feedback collected, analysed and action taken and feedback available on website**

**B. Feedback collected, analysed and action has been taken**

**C. Feedback collected and analysed**

**D. Feedback collected**

**Response:** A. Feedback collected, analysed and action taken and feedback available on website

File Description	Document
Any additional information	<a href="#">View Document</a>
URL for feedback report	<a href="#">View Document</a>

## Criterion 2 - Teaching-learning and Evaluation

### 2.1 Student Enrollment and Profile

#### 2.1.1 Average percentage of students from other States and Countries during the last five years

**Response:** 1.14

##### 2.1.1.1 Number of students from other states and countries year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
21	31	37	35	27

#### File Description

#### Document

List of students (other states and countries)

[View Document](#)

Institutional data in prescribed format

[View Document](#)

Any additional information

[View Document](#)

#### 2.1.2 Average Enrollment percentage (Average of last five years)

**Response:** 58.62

##### 2.1.2.1 Number of students admitted year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
456	416	533	500	578

##### 2.1.2.2 Number of sanctioned seats year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
804	864	924	924	756

#### File Description

#### Document

Institutional data in prescribed format

[View Document](#)

Any additional information

[View Document](#)

### 2.1.3 Average percentage of seats filled against seats reserved for various categories as per applicable reservation policy during the last five years

**Response:** 37.42

2.1.3.1 Number of actual students admitted from the reserved categories year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
206	171	173	147	102

#### File Description

#### Document

Institutional data in prescribed format

[View Document](#)

Any additional information

[View Document](#)

## 2.2 Catering to Student Diversity

### 2.2.1 The institution assesses the learning levels of the students, after admission and organises special programs for advanced learners and slow learners

**Response:**

PHCET identify and support students with varying learning capability. Advanced learners and slow learners are identified by observing the performance of students in different activities by subject-in-charge and class in charge during the teaching learning process as well the results of various assessment processes during the semester.

The faculty members have periodic interaction with the parents of all learners about the performance of their ward in the parent-teacher meeting. It helps to find out the reasons for their child not doing well in studies or continued absenteeism. This builds a rapport with the parents, students and teachers resulting in reduction in the rate of failures and dropouts.

A blend of motivation and responsibility of both parents and faculty create a positive mind-set and help overcome the hurdles the students face.

After analysis, action plan for slow learners are designed and executed by subject-in-charge. Actions for improving students' performance include remedial classes, extra lab sessions, and tutorials and motivating to read books and watching subject related video lectures, etc.

Initiatives for slow students:

The faculty monitors the attendance, activities and the performance of the slow learners and identifies those deviating from studies and corrective measures are suggested.

Additional support is offered through remedial classes, examination oriented coaching and question banks and notes. Special counselling and study workshops are also conducted for those students who have failed in any subject. Online Aptitude Test helps students to get idea of the basic concepts related to subjects

A similar process is adopted for identification of advanced learners.

Initiatives for advanced learners:

- The departments have a culture of encouraging advanced learners by providing them necessary guidance and moral support based on their overall performance and their orientation towards academics. They are encouraged to attend conferences, workshops, publish papers, and participate in competitions and learn to work in a team.
- The students having high academic records are encouraged to achieve higher ranks in university, appear GATE, GRE, TOFEL, IELTS, etc. during their final year. Students having orientation towards research are motivated to present their work at conferences and competitions.

Encourage students go beyond prescribed curriculum to pursue higher studies and also become proficient in problem solving.

Mentoring students for placements, entrepreneurship and higher studies help them improve their proficiency.

File Description	Document
Any additional information	<a href="#">View Document</a>
Link for Additional Information	<a href="#">View Document</a>

### 2.2.2 Student - Full time teacher ratio

**Response:** 14.29

File Description	Document
Any additional information	<a href="#">View Document</a>

### 2.2.3 Percentage of differently abled students (Divyangjan) on rolls

**Response:** 0.07

#### 2.2.3.1 Number of differently abled students on rolls

**Response:** 2

File Description	Document
List of students(differently abled)	<a href="#">View Document</a>
Institutional data in prescribed format	<a href="#">View Document</a>
Any other document submitted by the Institution to a Government agency giving this information	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

## 2.3 Teaching- Learning Process

### 2.3.1 Student centric methods, such as experiential learning, participative learning and problem solving methodologies are used for enhancing learning experiences

#### Response:

PHCET has been continually striving to enhance the learning experience of students and hence innovating and increasing the student-centric methods every year. In ten years the count is fifty. These methods aim for the total development of the person and address various areas such as academics, examination and results, personality development, communication and soft skills, community commitment and social responsibility, etc. Some of these are practised at the College level, some at the department level and those related to academics and examinations are applied by the faculty concerned. Each faculty adopts what suits the students and the course under consideration.

PHCET has evolved a novel methodology to assess and classify students based on understanding of their learning ability rather than absolute marks. This methodology has enabled us to support various groups according to their needs. Adaptation of Bloom's Taxonomy for PHCET needs as Information (Knowledge), Understanding, Application, and Synthesis helped the evolution of these methods.

A sample of these methods is briefly narrated below. The whole list is available on the PHCET website with supporting evidence.

Concept Inventory, Classroom instruction (flipped Classroom), IIT Spoken Tutorials, Project Based Learning (PBL), Study workshop, etc. directly enhance academics and the performance in examinations.

Students' seminars, Social networking communities, Student Chapters of Professional Organizations such as CSI, ACM, IETE, IE, etc., are managed entirely by students in each department. This gives exposure to the professional world as well as helps learn management. Public Speaking Forum, Debating Club, etc. are intended to enhance communication, soft skills and confidence. Students Council and various committees that get created from time to time for various activities of the college are great opportunities to learn management of resources - man and material.

Every year new methods are added, some get modified and adding new dimensions. Special Interest Groups (SIGs) are spearheaded by faculty co-ordinators with faculty and students as members. SIG encourages young students to look to their future and plan and prepare themselves early on.

Meditation of five minutes during every lecture hour is a new idea. However, the students immensely appreciate it and remind when a teacher happens to forget it. It is a way of relaxing and helps concentration in the class.

As the University keeps updating and modifying the curriculum and the syllabus more, and newer student-centric methods are added.

The list and related details of all presently practiced student-centric methods are available on <http://www.phcet.ac.in/students/student-centric-methods.asp>

File Description	Document
Any additional information	<a href="#">View Document</a>
Link for Additional Information	<a href="#">View Document</a>

### 2.3.2 Percentage of teachers using ICT for effective teaching with Learning Management Systems (LMS), E-learning resources etc.

**Response:** 100

#### 2.3.2.1 Number of teachers using ICT

Response: 206

File Description	Document
List of teachers (using ICT for teaching)	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>
Provide link for webpage describing the " LMS/ Academic management system"	<a href="#">View Document</a>

### 2.3.3 Ratio of students to mentor for academic and stress related issues

**Response:** 14.29

#### 2.3.3.1 Number of mentors

Response: 206

File Description	Document
Any additional information	<a href="#">View Document</a>

### 2.3.4 Innovation and creativity in teaching-learning

**Response:**

Some of the significant aspects at PHCET about innovation and creativity are as follows:

- No of Patents filed : 16
- No. of Patents Awarded : 03
- No of Entrepreneurs Emerged: 05
- Research, Innovation and Incubation Centre and an Intellectual Property Rights (IPR) Cell have been set up.
- A Component Library from where students and faculty can borrow components for innovative projects exists.
- An ISRO Outreach Centre has been set up along with ISRO where nearly 3500 students of PHCET registered for 18 online courses on geospatial technologies had obtained course completion certificates.
- The need to reduce or eliminate the laborious process of manually stamping each answer book of the students gave birth to the idea of “Automated Stamping Machine”. The entire work – from concept, design, development, manufacture and testing - was carried out by the second, third and fourth year students from Mechanical, Electronics and Telecommunication and Computer Engineering Departments and is in the process of being patented.
- The MES Mapathon 2017 was conducted as a collaborative, open project to assist in putting vulnerable people on map so that any Government or NGO can reach these people in crisis. The task for this Mapathon was an area in South Sudan War zone. It is vital that accurate and up-to-date mapping information is available to allow the Red Cross to respond more effectively and efficiently. Training and warm snacks were sponsored by Mapbox Inc., whereas Transportation was sponsored by PHCET. The Mapathon event resulted in maps for 3862 buildings and 365 km roads in South Sudan-Uganda border at the assigned area to be used on site by organizations including the RedCross, Médecins Sans Frontières (MSF), Hotosm and MissingMaps.
- Robogiria – a Robotics workshop to help school students from neighbouring villages to make Robots and thus instil in them excitement about STEM education are creative ways by which PHCET involves in the community around it.
- TEAM STARKERS is a students’ team formed in 2017for representing PHCET in GO-KARTing (motorsport racing) competitions all over India. The students design and manufacture go-karts. This was the only team to qualify from Mumbai region.
- A large number of PBL projects are carried out in Innovation Lab.
- In order to make the teaching effective, PHCET adapted Bloom’s Taxonomy as the basis from day one.

We are in the process of developing an “MPloyability Index” to check the preparedness of a student from employability point of view. We had already discussed this with some representatives of the Industry (Infosys, Oracle, IBM, etc.). They had appreciated our idea. Our faculty members had prepared a question bank of about 7500 questions. The testing and cleaning of this question bank is in progress. We propose to benchmark this question bank against International Standards.

File Description	Document
Any additional information	<a href="#">View Document</a>

## 2.4 Teacher Profile and Quality

### 2.4.1 Average percentage of full time teachers against sanctioned posts during the last five years

**Response:** 101.69

File Description	Document
Year wise full time teachers and sanctioned posts for 5 years	<a href="#">View Document</a>
List of the faculty members authenticated by the Head of HEI	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

### 2.4.2 Average percentage of full time teachers with Ph.D. during the last five years

**Response:** 5.26

#### 2.4.2.1 Number of full time teachers with Ph.D. year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
14	12	11	7	8

File Description	Document
List of number of full time teachers with PhD and number of full time teachers for 5 years	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

### 2.4.3 Teaching experience per full time teacher in number of years

**Response:** 6.85

#### 2.4.3.1 Total experience of full-time teachers

Response: 1411

File Description	Document
Any additional information	<a href="#">View Document</a>

### 2.4.4 Percentage of full time teachers who received awards, recognition, fellowships at State,

**National, International level from Government, recognised bodies during the last five years****Response:** 29.98

2.4.4.1 Number of full time teachers receiving awards from state /national /international level from Government recognised bodies year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
21	19	7	7	5

File Description	Document
Institutional data in prescribed format	<a href="#">View Document</a>
e-copies of award letters (scanned or soft copy)	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

**2.4.5 Average percentage of full time teachers from other States against sanctioned posts during the last five years****Response:** 13.33

2.4.5.1 Number of full time teachers from other states year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
31	31	26	23	19

File Description	Document
List of full time teachers from other state and state from which qualifying degree was obtained	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

**2.5 Evaluation Process and Reforms****2.5.1 Reforms in Continuous Internal Evaluation(CIE) system at the institutional level****Response:**

Though PHCET is governed by more or less a rigid framework as given by the University of Mumbai as far as the evaluation processes (both Internal and External) are concerned, we do have some flexibility in

reforming some of them.

The evaluation scheme is as follows:

- Two internal tests (20 marks each)
- Assignments
- Seminars
- Laboratory experimentation
- Practical Examinations
- Mini projects as part of the subjects
- Major project as part of the degree programme.
- Final theory examinations conducted by the University of Mumbai

The evaluation policy with a detailed scheme for university examinations are made available to students and faculty. On an average, students have at least one evaluation happening every 15 days – be it as a class assignment, class test, laboratory evaluation, quiz, unit test, etc.

The evaluations are divided in to two parts – Internal and External. All internal evaluations are performed by the in-house faculty members. While, the external evaluations are performed by external faculty members who are deputed, for this purpose, by the University of Mumbai.

The weightages of all the evaluations are as per the guidelines given by the University of Mumbai. Weightages for some subjects vary depending upon the contact hours as prescribed by the University of Mumbai. Typically, Physics and Chemistry have 3 contact hours per week, while Mathematics has 4.

Theory examination question papers are set by the University of Mumbai. Some of our faculty members who have been approved by the University of Mumbai also take part in this process – but strictly under the supervision of the University of Mumbai. Question papers are set in the University of Mumbai premises and are directly under the control of the Examination Cell of the University of Mumbai. Examination papers are dispensed to every college online one hour prior to the starting of the examination.

**Some specific reforms are as given below:**

Since our students were having difficulty with the Machine based objective tests conducted by prospective employers, we converted the first Unit Test in to an On-line test. We found that the students started a random guess. This affected their second Unit Test. Hence, we discontinued this practice. Subsequently, we discussed with the students and came up with a scheme where in the Unit Test 1 was made very tough and Unit Test 2 relatively easy. This had helped us in ensuring that the students started taking the tests seriously.

Assignments were another major concern for us as students copy each other's assignments. PHCET had

successfully solved this problem by changing the assignments process. All departments had come together to make the students' assignments effective. In order to achieve this, faculty members had come up with a scheme to assign each student with a customized assignment. This process ensures that no two students will get the same assignment. This process had enables PHCET to ensure that copying in assignments is also eliminated.

File Description	Document
Any additional information	<a href="#">View Document</a>
Link for Additional Information	<a href="#">View Document</a>

### 2.5.2 Mechanism of internal assessment is transparent and robust in terms of frequency and variety

#### Response:

In PHCET, internal assessment forms an integral part of the evaluation process. The results of various internal assessments are indication of the quality of teaching and learning processes and their effectiveness. The assessments aim to improve the personal and professional competence and the academic achievement of the student. A streamlined and transparent mechanism for continuous monitoring and evaluation is developed. Internal assessment is transparent and every student is aware of the process of evaluation of theory and practical. Marks obtained in the examination are conveyed to the students within a week of completion of the examinations. Through a careful monitoring of various parameters, the Institute identifies slow and advanced learners.

Marks for the experiments performed are informed to the student after each laboratory session. Poor performers are allowed to improve their marks by redoing the experiment. The assignments given to the students are evaluated on the basis of various cognitive processes like knowledge, understanding, application, analysis, synthesis and evaluation.

Along with collaborative learning, experiential learning is also integrated and is an important part of PHCET teaching-learning process. Faculty members mentor groups of students. The participatory learning environment includes activity learning, mini projects, presentation, case studies, and includes industrial visits.

The departments conduct remedial classes for slow learners. The student counsellor assesses their problems and motivates them to reach their academic goals. Remedial classes are organized to clarify doubts. Extra classes help students to achieve academic success. During remedial classes also, certain evaluations take place. The results of these evaluations are given to the students immediately.

Students are given projects to work in teams. The teacher makes inquiries into learning and contribution of each member of the team. One may be asked questions to write a brief account of one's contribution, or to assess the contribution of each member of the group. This information is used to fine-tune the marks awarded to each member. On occasions, when a student fares badly in his/her Internal project presentations that carry marks, he/she is given feedback about his/her performance immediately and he/she is also given an opportunity to rework the presentation. This helps them in scoring better marks. Industry visit is a

regular practice at PHCET for practical experience. Internship is undertaken by students to enhance the practical knowledge. On occasions, depending upon the type of industrial visit, the students are asked to make a presentation on their visit which gets evaluated. This is done to ensure that the students take their visits seriously and learn something. The results of such evaluations are provided immediately to the students. We are in the process of developing an “MPloyability Index” to check the preparedness of a student from employability point of view. We had already discussed this with some representatives of the Industry (Infosys, Oracle, IBM etc). Our faculty members had prepared a question bank of about 7500 questions. The testing and cleaning of this question bank is in progress. We propose to benchmark this question bank against International Standards.

File Description	Document
Any additional information	<a href="#">View Document</a>
Link for Additional Information	<a href="#">View Document</a>

### 2.5.3 Mechanism to deal with examination related grievances is transparent, time-bound and efficient

#### Response:

PHCET has a dedicated examination cell that coordinates and conducts both the end of semester University examinations as well as internal examinations of the Institute. It also liaises with the examination section of the University of Mumbai. In an academic year, the Examination Cell spends sixteen weeks exclusively for conducting University examinations, Internal examinations and for oral and practical examinations. This is a serious responsibility and is handled very efficiently and proactively to avoid any discomfort for both students and faculty.

Examination In-charge is the Head of the Examination Cell which is divided into three sections namely, Examination section, Records Section and Administration Section.

The members who are responsible for the university examination include chief conductor, joint chief conductors, unfair-means committee, senior supervisors, junior supervisors and the understudy supervisors.

Examination cell deals with any kind of grievances related to examination and evaluation. The student related examination grievances include- corrections in Grade Card, change in name or spelling, marks updating after revaluation and pending results of lower semesters, etc. Such cases are promptly handled and addressed on time and forwarded to the university with regular follow up till the matter is resolved by the University.

Ensuring smooth and orderly conduct of examinations, timely declaration of results, and coordination with all departments for timely dissemination of examination related information to all students are the stated objectives.

The responsibilities are to conduct end-of-semester examinations, to prepare and submit gazettes of results to the University of Mumbai, to publish results on time, to distribute mark sheets to the students who pass

the examinations at end of each year, to distribute degree certificates issued by University of Mumbai and to keep record of every issue related to the examinations and organizing workshops and seminars for the improvement of the examination system.

Anti-Unfair Means and Discipline Committee is constituted to handle effectively and objectively the examination related grievances. The committee resolves any complaint from the student or from the examination administration regarding any malpractice or any unsavoury incident during the examination.

The objectives are to ensure honesty and fairness during both Internal and University Examinations and to assist the college authorities in promoting and maintaining discipline in the institute.

The responsibilities are to report in writing any malpractice or anomaly found during the examination to the Joint Chief Conductor, to complete all the necessary formalities for lodging a complaint, to educate all junior supervisors about the unfair means process, to take rounds of examinations (at least twice during the examinations), to promote and maintain discipline in the Institute by proactively assisting the Heads of the Departments and the Principal by involvement and giving suggestions.

In addition to the above, examination cell also coordinates with all the stakeholders and departments to conduct the Viva Examinations at both PG and PhD levels.

The examination cell together with the various committees does a commendable job of conducting examinations every academic year and proactively reduce the potentiality for grievances.

File Description	Document
Any additional information	<a href="#">View Document</a>
Link for Additional Information	<a href="#">View Document</a>

#### 2.5.4 The institution adheres to the academic calendar for the conduct of CIE

##### Response:

Since PHCET follows a semester scheme as given by the University of Mumbai, PHCET has no option but follow the academic calendar as given by the University of Mumbai. In order to ensure that PHCET adheres to the academic calendar of the University of Mumbai, a committee is constituted for the preparation of detailed academic calendar of the College. The calendar outlines the semester schedule, internal examination schedule, external examination schedule and other curricular and co-curricular activities.

PHCET has three different academic calendars. One for First Year of Engineering students as their semester starts a bit late; Second for Second Year, Third Year and Final Year Bachelor students; while the third is for the Postgraduate students. Each department has its own academic calendar that incorporates all activities that the department plans to organize for its students. It also incorporates the college level and University level activities. This process helps the departments and the students considerably to promote student centred activities effectively. The college has nearly fifty student-centric activities and the

departments and the faculty have the freedom to practice as many as they are able to handle effectively within the constraints of time and other resources available. The academic calendar is of great significance and helps decentralization of the academic management of PHCET.

At the department level there are several important activities that need to be streamlined on the basis of the academic calendar for strengthening the teaching learning process. A few of these are discussed below to illustrate the value and the importance PHCET attaches to adhering to the academic calendar for the conduct of CIE.

The head of the department finalizes the course allocation for the faculty members based on their choice and area of interest or expertise. The faculty members before the commencement of semester prepares the lesson plan, indicating the topics to be covered lecture wise including the evaluation process for each subject. It is reviewed by one of the senior faculty members and approved by the head of the department. Timetable in-charge of each department prepares the timetable as per the guidelines. Time-table is made available to all concerned.

The performance of the students is assessed on a continuous basis by conducting two internal exams as per the University norms. In additions to the tests, assignments, mini-projects and final projects are also the part of Continuous Internal Evaluation. After the internal examinations the evaluated answer books are returned to the students and an opportunity is given to the students to discuss the evaluation with the teacher. The teacher rectifies any error on the spot, if any. All activities are time bound, well-ordered and stipulated. CIE is an on-going commitment to the student and to the academic community. The modality may change from time to time and would always continue to innovate.

File Description	Document
Any additional information	<a href="#">View Document</a>
Link for Additional Information	<a href="#">View Document</a>

## 2.6 Student Performance and Learning Outcomes

**2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution are stated and displayed on website and communicated to teachers and students**

### Response:

Course Objectives and Course Outcomes are prescribed for each course by the academic council of the University of Mumbai. However, each college has the freedom to rearticulate the Course Outcomes (COs) for implementation purposes without diluting the core of the specified objectives and outcomes. Each course is expected to have adequate stress on fundamental concepts, understanding and application of tools and techniques and practical implementation.

PHCET has seven branches of engineering programmes and teaches 40 to 50 courses every year for each branch. In order to ensure that the course objectives are articulated effectively, PHCET has nominated domain coordinators in each branch of engineering. Each branch can have many domains. For example,

Database domain may contain courses on basic databases, Data Warehousing, Data Mining, etc. These domain coordinators sit together along with the Head of Department and workout the Course Objectives that are in line with the Overall program outcomes and Vision and Mission of the Department. Once this is done, Heads of all departments sit together along with Principal and other senior Professors and finalize the Course Objectives. This is done to ensure that similar domains of different take inputs from each other and add value to the process.

Following the above process, PHCET has created uniformly six Course objectives for each course. The Course objectives of each course for all branches for eight semesters are available on PHCET website for the benefit of all stakeholders.

The mechanism to communicate the course outcomes to the students is as follows:

? Hard copy of syllabus and Course objectives is available in the departments for ready reference for the teachers and students.

? Soft copy of curriculum and Course objectives of different branches are uploaded on the website of PHCET for reference.

? The importance of the Course objectives is communicated to the students by the faculty. Each faculty in the beginning of the semester explains the Course objectives of the course being taught. Even the expected outcome of every module is also explained and reinforced by the faculty at the end of each module.

? Each student is required to complete a course exit survey that indicates the level of proficiency that the student has attained at the end of each course.

? The students' have to evaluate the course outcomes on a scale of 1 to 5. This helps the faculty to assess the understanding of the student with respect to the Course objectives of that course.

? Each course has six course outcomes. These are available with the detailed syllabus for each course and its objectives.

? Course objectives are also made available on our website.

File Description	Document
COs for all courses (exemplars from Glossary)	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>
Link for Additional Information	<a href="#">View Document</a>

### 2.6.2 Attainment of program outcomes, program specific outcomes and course outcomes are evaluated by the institution

**Response:**

- **Attainment of Course Outcomes**

CO attainment is calculated direct from the internal and external assessments. In internal assessment the knowledge and skills are assessed from the performance in assignments, tutorials, experiments, lab assignments, projects and internal assessment tests.

1. **Assignments:** Assignments involve a variety of questions including short notes, derivations, numerical, etc., based on the module wise syllabus. The marks of assignments are considered in the term work.
2. **Tutorials:** Tutorial questions range from basic to challenging problems to assess the fundamental concepts, numerical and analytical skills.
3. **Experiments:** Experiments are based on the curriculum and the marks are considered in the term work.
4. **Lab assignments:** Lab assignment assesses the practical knowledge and design capabilities. Marks are based on the laboratory records and performance in every experiment.
5. **Mini project:** A group of three or four students designs/fabricates/assembles a unit to demonstrate any concept of the subject. Its marks are considered in term work.
6. **Final year project:** This major project is performed by a batch of not more than four students. This measures the capability to apply engineering fundamentals in practice. The stage I (Semester VII) and stage II (Semester VIII) evaluations are based on quality, clarity, the feasibility of problem and its relevance to the specialization, and literature survey. It is assessed by a panel consisting of the Head of the department, examiner appointed by the University, senior faculty members, the project guide, and project coordinator.

1. **Internal assessment test:** The internal assessment has two tests. It is a metric to continuously assess the attainment of course outcomes. Two tests each of 20 marks are conducted. Test-1 on completion of minimum 40% of the curriculum and Test-2 at the end of the semester on the remaining curriculum ensures attainment of course outcomes. The test paper is framed by the subject teacher considering the course outcome. The average marks of two tests are considered.
2. **External assessment** includes Oral/Practical examination and end of semester examination. Oral/Practical examinations are conducted for each subject. End of semester examination is based on the complete syllabus and the question papers are set by the University. It is a measure to check whether the course outcomes are attained. It has the maximum weight-age in the direct assessment method.

- **Attainment of Program Outcomes and Program Specific Outcomes are calculated using:**

1. Direct Method which comprises of both internal and external assessment as in CO
2. Indirect Method using the course exit survey conducted for each subject.

- **The attainment calculation process is given below:**

1. Defining a target for passing percentage for the individual course.
2. Map COs with POs and PSOs
3. Calculate POs and PSOs attainment (Direct and Indirect method)
4. PO and PSO attainment (Direct and indirect) is divided by 10 to get the attainment values in the chosen range of 0 to 3.

Calculate the total attainment as a sum of 80% of direct and 20% of indirect attainments.

File Description	Document
Any additional information	<a href="#">View Document</a>
Link for Additional Information	<a href="#">View Document</a>

### 2.6.3 Average pass percentage of Students

**Response:** 95.59

2.6.3.1 Total number of final year students who passed the examination conducted by Institution.

Response: 781

2.6.3.2 Total number of final year students who appeared for the examination conducted by the institution

Response: 817

File Description	Document
Institutional data in prescribed format	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

## 2.7 Student Satisfaction Survey

2.7.1 Online student satisfaction survey regarding teaching learning process

**Response:**

## Criterion 3 - Research, Innovations and Extension

### 3.1 Resource Mobilization for Research

**3.1.1 Grants for research projects sponsored by government/non government sources such as industry ,corporate houses, international bodies, endowment, chairs in the institution during the last five years (INR in Lakhs)**

**Response:** 637000

3.1.1.1 Total Grants for research projects sponsored by the non-government sources such as industry, corporate houses, international bodies, endowments, Chairs in the institution year-wise during the last five years(INR in Lakhs)

2017-18	2016-17	2015-16	2014-15	2013-14
80000	175000	264000	118000	0

File Description	Document
List of project and grant details	<a href="#">View Document</a>
e-copies of the grant award letters for research projects sponsored by non-government	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

**3.1.2 Percentage of teachers recognised as research guides at present**

**Response:** 0.97

3.1.2.1 Number of teachers recognised as research guides

Response: 2

File Description	Document
Any additional information	<a href="#">View Document</a>

**3.1.3 Number of research projects per teacher funded, by government and non-government agencies, during the last five year**

**Response:** 0.13

3.1.3.1 Number of research projects funded by government and non-government agencies during the last five years

Response: 25

3.1.3.2 Number of full time teachers worked in the institution during the last 5 years

Response: 984

File Description	Document
Supporting document from Funding Agency	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>
Funding agency website URL	<a href="#">View Document</a>

## 3.2 Innovation Ecosystem

**3.2.1 Institution has created an ecosystem for innovations including incubation centre and other initiatives for creation and transfer of knowledge**

**Response:**

### **Research Innovation and Incubation Centre**

#### **1. Introduction**

The Research Innovation and Incubation Centre of PHCET was established on August 21, 2013. The purpose of the Centre is to motivate faculty and students to conduct research in areas of their interest and social benefit. Publishing of good quality research papers is the expected offshoot of the work.

#### **2. Objectives**

The objectives of the Centre are: (a) Promote core and interdisciplinary research among the faculty members and students; (b) Motivate and enhance student participation in experiential learning and interdisciplinary collaborations and (c) Provide a platform to aspiring entrepreneurs for commercialization of new products.

#### **3. Output - Contribution of Students and Faculty**

This facility provides necessary resources and infrastructure for programs such as Project Based Learning (PBL), student competitions, and industry as well as academia sponsored projects. Some of the sponsored projects include development of an Automatic Stamping Machine, Fingerprint Scanning Software and a Bomb Disposing Robot for Navi Mumbai Police and Exercycle for mobile and laptop charging.

The students are provided with resources such as computers, working space and financial help for establishing a start-up. One of the projects ([www.alostay.com](http://www.alostay.com)) was selected to present their work at the Y3 generator start-up funding round in the San Francisco Bay area.

#### **4. Management**

The centre is managed by a group of faculty members belonging to different departments to promote

interdisciplinary research. PHCET provides support in the form of infrastructure and components which can be borrowed for carrying out the research work by the students as well as the faculty members.

## 5. Resources

The resources in the centre include: the Computer lab (67.74 m<sup>2</sup>), the 3D printing lab (92.14 m<sup>2</sup>), the Component Library (66.36 m<sup>2</sup>), a dedicated Workshop Facility (61.79 m<sup>2</sup>) and the Laser Cutting Lab (90.5 m<sup>2</sup>).

## 6. Benefits

Students and faculty are encouraged to pursue development of product prototypes using the facilities and infrastructure provided at the centre and thereby fostering an entrepreneurial culture.

## 7. Major Research Areas

Major research areas include prototype development and testing, software development and testing, smart systems, image processing, medical applications, scientific publications and technical project development.

## 8. Success Stories

The number of students using the Research, Innovation and Incubation facility has steadily increased over the years. The facilities provided include financial support for business competitions to support extraordinary business ideas. The online hotel booking platform (ALO stay), betting platform (Betmount), and car care services start-up (Carmojo) were among the groups provided with financial support and incubation assistance.

## 9. Challenges

The major challenge one faces is the full utilization of a very valuable resource productively for creating knowledge and wealth. Faculty and students have a challenge of coping with the schedule of classes and other regular academic activities.

## 10. Future Scope

The future of the Centre lies in the dynamism of the faculty and students to induce and induct faculty and students to try new ideas. Inclusion of more interdisciplinary projects which can evolve as start-ups would lead to entrepreneurship and employment.

File Description	Document
Any additional information	<a href="#">View Document</a>
Link for Additional Information	<a href="#">View Document</a>

### 3.2.2 Number of workshops/seminars conducted on Intellectual Property Rights (IPR) and Industry-

**Academia Innovative practices during the last five years****Response:** 20

3.2.2.1 Total number of workshops/seminars conducted on Intellectual Property Rights (IPR) and Industry-Academia Innovative practices year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
5	5	5	4	1

File Description	Document
Report of the event	<a href="#">View Document</a>
List of workshops/seminars during the last 5 years	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

**3.3 Research Publications and Awards****3.3.1 The institution has a stated Code of Ethics to check malpractices and plagiarism in Research****Response:** Yes

File Description	Document
Institutional data in prescribed format	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

**3.3.2 The institution provides incentives to teachers who receive state, national and international recognition/awards****Response:** Yes

File Description	Document
e- copies of the letters of awards	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

**3.3.3 Number of Ph.D.s awarded per teacher during the last five years****Response:** 0.5

3.3.3.1 How many Ph.Ds awarded within last five years

Response: 1

**3.3.3.2 Number of teachers recognized as guides during the last five years**

Response: 2

<b>File Description</b>	<b>Document</b>
List of PhD scholars and their details like name of the guide , title of thesis, year of award etc	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

**3.3.4 Number of research papers per teacher in the Journals notified on UGC website during the last five years**

Response: 1.8

**3.3.4.1 Number of research papers in the Journals notified on UGC website during the last five years**

2017-18	2016-17	2015-16	2014-15	2013-14
114	81	83	53	24

<b>File Description</b>	<b>Document</b>
List of research papers by title, author, department, name and year of publication	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

**3.3.5 Number of books and chapters in edited volumes/books published and papers in national/international conference proceedings per teacher during the last five years**

Response: 1.61

**3.3.5.1 Total number of books and chapters in edited volumes / books published, and papers in national/international conference-proceedings year-wise during the last five years**

2017-18	2016-17	2015-16	2014-15	2013-14
58	52	61	53	93

File Description	Document
List books and chapters in edited volumes / books published	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

### 3.4 Extension Activities

#### 3.4.1 Extension activities in the neighbourhood community in terms of impact and sensitising students to social issues and holistic development during the last five years

##### Response:

It is ingrained in PHCET to be involved in the community around it and participate in the lives of its well-wishers. Every year PHCET organizes and participates in many community activities both educational and social.

PHCET is committed to STEM education and involves in extension activities to enthuse school students for STEM education. School students from neighbouring towns and villages spend a day in PHCET learning Robotics and participate in a competition. Last two years 800 students from eleven schools have participated.

A 'Community Service Day', is observed every year. The last one was on January 27, 2018. PHCET invites NGOs to participate. In 2018, two NGOs, Immanuel Mercy Home Ashram located at New Panvel with 23 children and Aroma Kids Kingdom, Turbhe, Navi Mumbai with 40 children participated.

The students and faculty bring the children from the orphanages to the campus for a fun filled day with entertainment and competitions and delicious food is organized. At the end of a busy and purposeful day the students and faculty ensure the safe return of the children to their residences with prizes, tokens of love and mementos. **PHCET students come face to face with the reality of the last, least and lost.**

**PHCET does what it can for international assistance too.**

**Mapathon 2017 held on August 19, 2017 was one such activity.** It was conducted to assist putting vulnerable people on map so that Governments and NGOs can reach these people during crisis. Mapping information is vital for humanitarian activities during crisis. Violence in South Sudan since July 2016 had led to a large population movement into the north of Uganda. *Maps for 3862 buildings and 365 km of roads* of the assigned area were created to be used by Red Cross and others. These maps would enable sanitation to be effectively provisioned for the people living there. ***The students understood the plight of being not seen on the map of the world and also the power of modern tools to help from where one is.***

Cause of life has always inspired PHCET to be ready with its own blood and donates it freely. The last **Blood Donation Camp 2016-17 on Jan 18, 2017 was held** in association with The Rotary Club of Patalganga, with the slogan '**Give Blood, Give Life**'.

**Program on Awareness of Cashless Transactions** called 'Vittiya Saksharata Abhiyan (VISAKA)' was

conducted on Jan 16, 2017 for Sawale Village, four 4 Kms away from PHCET and 50 people attended.

Cashless transactions, Digital India, Different modes of digital transactions, transaction using BHIM app, etc., were discussed. The **villagers gave a positive feedback** and asked for more such involvements from PHCET.

**Save River Rally Mission** and **Traffic Mitra** PHCET participated in Save River Rally Mission organised by Sadhguru on September 1, 2017. Traffic Mitra program to help Navi Mumbai Traffic Police was held on Sept 4, 2017. **The Story of Kargil War by Laksh Foundation was organized on March 11, 2016** with the intention to *motivate students to join Indian army*

File Description	Document
Any additional information	<a href="#">View Document</a>
Link for Additional Information	<a href="#">View Document</a>

### 3.4.2 Number of awards and recognition received for extension activities from Government /recognised bodies during the last five years

**Response:** 10

3.4.2.1 Total number of awards and recognition received for extension activities from Government /recognised bodies year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
1	3	3	2	1

File Description	Document
Number of awards for extension activities in last 5 years	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

### 3.4.3 Number of extension and outreach Programs conducted in collaboration with Industry, Community and Non- Government Organizations through NSS/ NCC/ Red Cross/ YRC etc., during the last five years

**Response:** 59

3.4.3.1 Number of extension and outreach Programs conducted in collaboration with Industry, Community and Non- Government Organizations through NSS/ NCC/ Red Cross/ YRC etc., year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
27	13	11	4	4

File Description	Document
Reports of the event organized	<a href="#">View Document</a>
Number of extension and outreach programs conducted with industry,community etc for the last five years	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

### 3.4.4 Average percentage of students participating in extension activities with Government Organisations, Non-Government Organisations and programs such as Swachh Bharat, Aids Awareness, Gender Issue, etc. during the last five years

**Response:** 77.02

3.4.4.1 Total number of students participating in extension activities with Government Organisations, Non-Government Organisations and programs such as Swachh Bharat, Aids Awareness, Gender Issue, etc. year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
2632	2242	2585	1520	1436

File Description	Document
Report of the event	<a href="#">View Document</a>
Average percentage of students participating in extension activities with Govt or NGO etc	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

## 3.5 Collaboration

### 3.5.1 Number of linkages for faculty exchange, student exchange, internship, field trip, on-the-job training, research, etc during the last five years

**Response:** 189

3.5.1.1 Number of linkages for faculty exchange, student exchange, internship, field trip, on-the-job training, research, etc year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
82	50	28	26	3

File Description	Document
Number of Collaborative activities for research, faculty etc	<a href="#">View Document</a>
Copies of collaboration	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

**3.5.2 Number of functional MoUs with institutions of National/ International importance, Other Institutions, Industries, Corporate houses etc., during the last five years (only functional MoUs with ongoing activities to be considered)**

**Response:** 10

3.5.2.1 Number of functional MoUs with institutions of national, international importance, other universities, industries, corporate houses etc. year-wise during the last five years (only functional MoUs with ongoing activities to be considered)

2017-18	2016-17	2015-16	2014-15	2013-14
2	4	2	1	1

File Description	Document
e-copies of the MoUs with institution/ industry/ corporate house	<a href="#">View Document</a>
Details of functional MoUs with institutions of national, international importance, other universities etc during the last five years	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

## Criterion 4 - Infrastructure and Learning Resources

### 4.1 Physical Facilities

**4.1.1 The institution has adequate facilities for teaching- learning. viz., classrooms, laboratories, computing equipment, etc.**

**Response:**

PHCET is committed to provide high quality education through classroom teaching, practical training, interaction with industries and other organizations. It strives to train diverse population of students providing excellent infrastructure and experience.

There is an abundance of infrastructural resources such as Lecture Halls: 52, Tutorial Rooms:9, Drawing Halls:4, Seminar Halls: 07, Laboratory: 65, Library: 01(14000 Sq.Ft), TPO Office: 01, First Aid Room: 01, Counselling Centre: 01,Office: 01, Exam Cell: 01, Assessment Rooms: 02, Workshops: 08, HoD Rooms: 08, Faculty Rooms: 08, Boys Room: 01, Girls Common Room: 03, Conference Halls (Conclave): 02 (Seating 180 each), Auditorium: 01(Seating 1200), Light Board Studio: 01, Smart Class room: 01, Research Innovation and Incubation Centre: 01, Store Room: 01, Photocopy Centre:01. All classrooms have AV facility. And all laboratories, workshops, etc. are well equipped. A student: computer ratio of 4:1 and an internet bandwidth of 100 Mbps make the work environment very comfortable.

Library houses an enviable collection of resources in the field of Engineering, Study Skills, Personality Development, General Management, Humanities, Science and allied subjects. 23,000 books, access to 6533 e-journals and 2094 E-books make it a rich learning environment. Online Public Access Catalogue, internet browsing area for accessing e-resources, Laptop zone with Wi-Fi facility and discussion room, separate room for rare documents and reference books meets the needs of different users. Library subscribes also to 113 national and international Journals and Magazines in print.

PHCET also has a state-of-the-art Research Innovation and Incubation Centre established on August 21, 2013. The Centre is to motivate faculty and students' to do high quality research and innovation work.

The resources in the centre include: the Computer lab (Area = 67.74 m<sup>2</sup>), the 3D printing lab (Area = 92.14 m<sup>2</sup>), the Component Library (Area = 66.36 m<sup>2</sup>), a dedicated Workshop Facility (Area = 61.79 m<sup>2</sup>) and the Laser Cutting Lab (Area = 90.5 m<sup>2</sup>), etc. with enviable tools and facility. Students and faculty are encouraged to pursue development of product prototypes to foster an entrepreneurial culture.

A modern gymnasium, indoor sports facility, a playground with facilities for multiple sports and games provide ample opportunities for the development of the total personality of young people. The facilities also include a Sports Authority of India sponsored sports training centre. Experienced coaches are available for sports, games, and athletics.

Transport is provided for students, faculty and staff from various locations with 48 buses plying on different routes from places such as Alibag, Kharjat, Panvel, and Pen. A spacious and hygienic canteen

caters to the varying needs and food habits of students at reasonable prices.

Hostel facilities for both boys and girls are available and are situated in Eco-friendly environment having 24 Hour Security. All amenities for communication, recreation, entertainment, indoor games and sports are provided.

PHCET has best in class facilities and ambience for enhancing teaching learning experience; complies with all statutory requirements; and gives a feeling of well-being for all stakeholders.

File Description	Document
Any additional information	<a href="#">View Document</a>
Link for Additional Information	<a href="#">View Document</a>

#### 4.1.2 The institution has adequate facilities for sports, games (indoor, outdoor), gymnasium, yoga centre etc., and cultural activities

##### Response:

##### Sports:

PHCET gives immense importance to the total development of young students. Sports, games, athletics, performing arts, cultural events, etc., play a significant role in it. The Institute encourages, supports and makes available all resources required for developing the innate talents of students. It has a sports ground with facilities for multiple games and sports. The facilities include also a Sports Authority of India sponsored sports training centre. Experienced coaches are available for sports, games, and athletics.

Many take advantage of a fully equipped Gymnasium, with qualified instructors that can be used by students, faculty and staff. Sports quota is available for the sports students at the time of admission. The students participate in the Inter collegiate tournaments and other competitions held by University of Mumbai. Sports achievers and coaches are felicitated every year.

An excellent well planned Shooting Range, which is not generally available in academic institutions, is created to pursue the sport. This is a shared facility located at our sister campus. One of our students had participated at the state level shooting competitions and another student had participated in fencing competitions at the national level.

##### Cultural Initiatives:

PHCET encourages the students to participate in various co-curricular, extra-curricular, social and cultural activities to hone their creative, managerial and hidden talents and skills. Many cultural events like Euforia, Uber-Rang, etc., are organized on campus to promote and to provide a platform for students to bring out their talents, abilities and skills by organizing and participating in diverse events.

Students organize and participate in a variety of cultural activities, performing arts, talent contests such as

dance, music, drama, skits, cartooning, clay modelling, group singing, classical solo, elocution, debates, quiz competition, fashion show, face painting, jewellery making, etc.

Euforia, the annual cultural festival is held during January-February. The primary objective of Euforia is to help the youth think out-of-the-box, plan and perform in challenging environments and create new opportunities for social and cultural interactions. Regional and local art forms such as Dhol Tasha – a local band depicting culture of Maharashtra, performed by different groups are encouraged. The student bands of the institute also perform during the grand finale of the celebrations.

PHCET is a treasure house of human talent that matches professional levels in diverse areas. The dramatics club of PHCET participates in the inter-collegiate dramatics competitions. The Music Club gave several performances.

There are common campus activities such as a Yoga Day, Meditation, etc. Several meditation sessions for all are organized in association with the 'SahajYog Kendra'.

### **Outdoor Games**

Well maintained facilities for Football, Handball, Basketball, Volleyball, Hockey, Cricket, Athletics, etc.

### **Indoor Games**

Caroms, Table-Tennis, Chess, etc.

### **Infrastructural facilities**

Sports ground - with facilities for Football, Basketball, Cricket, running track, etc.

Gymnasium fully equipped – Yes

### **Auditoriums:**

1. Main Auditorium - 01 - Fully air-conditioned with seating a capacity of 1200.
2. Open air Auditorium - 01
3. Conclave Hall - 02 - Fully air-conditioned with seating capacity of 180.

<b>File Description</b>	<b>Document</b>
Any additional information	<a href="#">View Document</a>
Link for Additional Information	<a href="#">View Document</a>

#### **4.1.3 Percentage of classrooms and seminar halls with ICT - enabled facilities such as smart class, LMS, etc**

**Response:** 100

4.1.3.1 Number of classrooms and seminar halls with ICT facilities

Response: 59

File Description	Document
Number of classrooms and seminar halls with ICT enabled facilities	<a href="#">View Document</a>
any additional information	<a href="#">View Document</a>
Link for additional information which is optional	<a href="#">View Document</a>

**4.1.4 Average percentage of budget allocation, excluding salary for infrastructure augmentation during the last five years.**

**Response:** 25.83

4.1.4.1 Budget allocation for infrastructure augmentation, excluding salary year-wise during the last five years (INR in Lakhs)

2017-18	2016-17	2015-16	2014-15	2013-14
228.9	255.82	419.5	281.75	227.65

File Description	Document
Details of budget allocation, excluding salary during the last five years	<a href="#">View Document</a>
Audited utilization statements	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

## 4.2 Library as a Learning Resource

**4.2.1 Library is automated using Integrated Library Management System (ILMS)**

**Response:**

PHCET Library is housed in 14000 sq. ft of modern amenities and situated on second floor and is fully automated.

PHCET Library is automated using open source software 'Koha'. Description of ILMS is as follows:

Name of the ILMS software – Koha

Nature of automation (fully or partially) – Fully

Version– 17.05.03.000

Year of automation– 2016

Koha, an integrated Library Management System is used to manage various functions of library. It has got remote access to OPAC (Online Access Public Catalogue) which is called as Web OPAC. URL link for the OPAC is <http://203.115.126.36:9000/>. Koha provides e-mail alerts for return/renewals of books before due dates; Reminders to return and renew overdue books.

Library is an integral part of the teaching learning processes of PHCET. The Library has got a rich collection of more than 23,000 books in the field of Engineering, Technology and related disciplines and 6533 e-journals and 2094 E-books. Library houses also an enviable collection of resources in the field of Engineering, Study Skills, Personality Development, General Management, Humanities, Science and allied subjects.

A learning environment with Online Public Access Catalogue, internet browsing area for accessing e-resources, Laptop zone with Wi-Fi facility and discussion room, room for rare documents and reference books.

Library subscribes to 113 national and international Journals and printed Magazines. Library has subscribed to the following E-resources.

**List of subscribed E-resources:**

SR. No.	E-Resources	Website	QTY	Remarks
1	IEEE Xplore Digital Library	<a href="https://ieeexplore.ieee.org">https://ieeexplore.ieee.org</a>	175	E-Jou
2	The American Society of Mechanical Engineers (ASME)	<a href="http://asmedigitalcollection.asme.org/">http://asmedigitalcollection.asme.org/</a>	32	
3	The American Society of Civil Engineers (ASCE)	<a href="https://ascelibrary.org/">https://ascelibrary.org/</a>	38	
4	J-Gate – Engineering & Technology (JET)	<a href="https://jgateplus.com/search/login/">https://jgateplus.com/search/login/</a>	4842	

5	K-Hub Virtual Library ( Engineering & Technology)	http://k-hub.in	1446	
			2094	E-bo
6	Videos & Web courses	http://digitalresource.mes.ac.in/nptel/	994	Vide Web
<b>Total</b>			<b>6533 - E- journals</b>	
			<b>2094 - E-books</b>	
			<b>994- NPTEL V Courses</b>	

Library provides the facility to check plagiarism for projects, thesis, research papers, and synopsis. Library has Turnitin, which is internet based plagiarism detection software. Turnitin checks for potential unoriginal content by comparing submitted documents to several databases using a proprietary algorithm. The documents submitted by students are stored in a database used to check for plagiarism to avoid duplication of subject contents of a project, thesis, research papers, etc., by identifying matching text between papers.

Library has created Facebook group, Instagram Account Page and Twitter Account. These provide valuable information on Career, Scholarships, and Various Entrance Exams etc. The group creates awareness and updates on Library Resources and Services. It gives information and news related to the field of education. The users may post/ message queries related to library, like shortage/ non availability of books, and other resources, comments and suggestions, etc.

Our library has excellent interiors and vibrant colour schemes. Our library boasts of colour schemes of the roof, which normally is left bland by all libraries. The library furniture is very sturdy and very vibrant as each table is painted in a different colour such that the overall appearance of the library becomes very energetic

File Description	Document
Any additional information	<a href="#">View Document</a>
Link for Additional Information	<a href="#">View Document</a>

#### 4.2.2 Collection of rare books, manuscripts, special reports or any other knowledge resources for library enrichment

**Response:**

The objective of rare documents collection initiative is to build a growing repository of valuable and inspiring resource of materials for the benefit of scholars, teachers and students for reference. The archive has original papers and other documents of the engineering courses, applied sciences, and humanities that are taught in PHCET.

The collection includes copies of documents which are out of print, papers of original inventors, anniversary review of celebrated inventions and discoveries, collected works, copies of patents of great inventions, copies of great pieces of literature, rare papers but of general interest, Nobel lectures, etc. They are selected based on characteristics such as the originality of research identified by their popularity and publishing date, limited issue, special character of the edition, and historical interest related to technology and at the same time having contemporary interest and inspiration.

The collection, although not exhaustive, is useful and meets the educational needs and supports research on the history of science and engineering. These have become essential for the ongoing initiatives of PHCET, especially for creating awareness about fundamental research and to support the activities of the Special Interest Groups (SIGs). The collection is classified according to the SIGs and includes items such as copies of patents of Henry ford, books written by Sir Isaac Newton, and Sir George Gabriel Stokes, memoirs and scientific correspondence, first patent on airplane by Wright Brothers, and nationally and internationally recognized standards.

The collection is organized according to areas of specialization in engineering offered in PHCET and further according to special interest groups of the specializations. The purpose of the collection is also to ensure preservation and protection of invaluable reference material besides extending the facility to the scholars to assist their research.

Rare documents will enrich the learner and provide general information and insight into the evolution of various concepts in science and engineering. For example, father of the automobile assembly line, Henry Ford holds 50 patents relevant to the automotive industry. Wilbur and Orville Wright made the first sustained, controlled flights in a powered aircraft on 17 December, 1903. They were the first to design and build a flying craft that they controlled while in the air. The International Organization for Standardization (ISO) is an international standard-setting body composed of representatives from various national standards organizations which was founded on 23 February 1947. It was established to promote industrial and commercial standards worldwide.

The present collection has 315 journal papers, a few books, monographs, etc., some of them having multiple volumes. There is also a special collection of more than two hundred nearly all original papers in Cryptology and other related areas from 1970 to 1995. The details of the collection as per the format are given in the additional information.

File Description	Document
Any additional information	<a href="#">View Document</a>
Link for Additional Information	<a href="#">View Document</a>

#### 4.2.3 Does the institution have the following:

- 1.e-journals
- 2.e-ShodhSindhu
- 3.Shodhganga Membership
- 4.e-books
- 5.Databases

A. Any 4 of the above

B. Any 3 of the above

C. Any 2 of the above

D. Any 1 of the above

**Response:** A. Any 4 of the above

File Description	Document
Details of subscriptions like e-journals,e-ShodhSindhu,Shodhganga Membership etc	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

#### 4.2.4 Average annual expenditure for purchase of books and journals during the last five years (INR in Lakhs)

**Response:** 16.58

4.2.4.1 Annual expenditure for purchase of books and journals year-wise during the last five years (INR in Lakhs)

2017-18	2016-17	2015-16	2014-15	2013-14
10.05	18.93	23.83	24.12	5.97

File Description	Document
Details of annual expenditure for purchase of books and journals during the last five years	<a href="#">View Document</a>
Audited statements of accounts	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

#### 4.2.5 Availability of remote access to e-resources of the library

**Response:** Yes

File Description	Document
Any additional information	<a href="#">View Document</a>

**4.2.6 Percentage per day usage of library by teachers and students****Response:** 21.91

4.2.6.1 Average number of teachers and students using library per day over last one year

Response: 690

File Description	Document
Any additional information	<a href="#">View Document</a>

**4.3 IT Infrastructure****4.3.1 Institution frequently updates its IT facilities including Wi-Fi****Response:**

The IT infrastructure meets all requirements and complies with all regulatory stipulations. The detailed list is attached.

**IT Infrastructure Details**

Sr. No.	Description	Available
1.	No. of PCs in Institute	780
2.	No. of PCs in Laboratories	680
3.	No. of PCs in Library	25
4.	No. of PCs in Faculty Rooms, Office & Staff	75
5.	No. of Printers	73
6.	No. of Switches	38
7.	Projectors	23
8.	Internet Bandwidth	100 Mbps
9.	Licensed System Software	3
10.	Open Source System Software	1
11.	Licensed Application Software	15
12.	Open Source Application Software	26
13.	Connection Ratio	1:1

**Server Details**

Sr. No.	Name of the Server	Configuration
1.	Tally ERP 9.0 (2014)	Windows Server 2003 R2

		Intel Xeon Processor E5-2609, 32 GB RAM, 1 TB HDD
2.	EduRight (2015)	Windows Server 2008 R2  Intel Xeon Processor E5-2620, 32 GB RAM, 5 TB HDD
3.	SolidWorks (2014)	Windows 7 SP1  Gigabyte Processor, 8 GB RAM, 500 GB HDD

**Networking Switch Details:**

Cisco SG300-28 28 Port Gigabit Managed Switch (38)

**Router Details:**

1. Ruckus Wireless Zone Director 1000

4G supported

1. Ubiquiti Networks (Library)

1. Airtel Wi-Fi

**Internet Details:**

Service Provider: Primenet Global Ltd.

Bandwidth available: 100Mbps Upgraded - August 1, 2018

Security Arrangements: Cyberoam CR2500iNG - 10.6.5

**Computer Details**

Sr. No.	Description	No. of PCs	Year of Purchase	Configuration
1.	PCs	60	2012	Intel DH61WW ATX Motherboard, Intel Processor, 4GB RAM, 500 GB HDD, St

2.	PCs	70	2012	Keyboard, Optical Mouse	
3.	PCs	20	2012	“	
4.	PCs	20	2013	Gigabyte GA-H61M-S2P Motherboard Processor, 16GBRAM, 1 TB HDD, St Keyboard, Optical Mouse	
5.	PCs	60	2013	Gigabyte GA-H61M-S2P Motherboard Processor, 8GBRAM, 500 GB HDD, St Keyboard, Optical Mouse	
6.	PCs	70	2013	Gigabyte GA-H61M-S2P Motherboard Processor, 8GBRAM, 500 GB HDD, St Keyboard, Optical Mouse	
7.	PCs	100	2013	“	
8.	Headphones	40	2013	Make - Circle concerto 201	
9.	PCs	30	2014	Gigabyte GA-H61M-S2P Motherboard Processor, 8GB RAM, 500 GB HDD, St Keyboard, Optical Mouse	
10.	PCs	70	2015	Gigabyte GA-H81M-DS2 Motherboard Processor, 8GBRAM, 500 GB HDD, St Keyboard, Optical Mouse	
11.	PCs	80	2015	Gigabyte GA-H81M-DS2 Motherboard Processor, 8GBRAM, 500 GB HDD, St Keyboard, Optical Mouse	
12.	PCs	90	2015	Gigabyte GA-H81M-DS2 Motherboard Processor, 8GBRAM, 500 GB HDD, St Keyboard, Optical Mouse	
13.	PCs	40	2016	“	
14.	Headphones	20	2016	Make - Circle concerto 201	
15.	PCs	30	2017	Gigabyte GA-H81M-DS2 Motherboard Processor, 8GB RAM, 500 GB HDD, St Keyboard, Optical Mouse	
16.	PCs	40	2018	“	

File Description	Document
Any additional information	<a href="#">View Document</a>
Link for Additional Information	<a href="#">View Document</a>

<b>4.3.2 Student - Computer ratio</b>	
<b>Response:</b> 3.92	
<b>File Description</b>	<b>Document</b>
Any additional information	<a href="#">View Document</a>

<b>4.3.3 Available bandwidth of internet connection in the Institution (Lease line)</b>	
>=50 MBPS	
35-50 MBPS	
20-35 MBPS	
5-20 MBPS	
<b>Response:</b> >=50 MBPS	
<b>File Description</b>	<b>Document</b>
Any additional information	<a href="#">View Document</a>

<b>4.3.4 Facilities for e-content development such as Media Centre, Recording facility, Lecture Capturing System (LCS)</b>	
<b>Response:</b> Yes	
<b>File Description</b>	<b>Document</b>
Facilities for e-content development such as Media Centre, Recording facility,LCS	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>
Link to photographs	<a href="#">View Document</a>

#### 4.4 Maintenance of Campus Infrastructure

<b>4.4.1 Average Expenditure incurred on maintenance of physical facilities and academic support facilities excluding salary component, as a percentage during the last five years</b>	
<b>Response:</b> 19.12	
4.4.1.1 Expenditure incurred on maintenance of physical facilities and academic support facilities excluding salary component year-wise during the last five years (INR in Lakhs)	

2017-18	2016-17	2015-16	2014-15	2013-14
96.90	196.63	304.96	319.02	118.46

File Description	Document
Details about assigned budget and expenditure on physical facilities and academic facilities	<a href="#">View Document</a>
Audited statements of accounts.	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

#### 4.4.2 There are established systems and procedures for maintaining and utilizing physical, academic and support facilities - laboratory, library, sports complex, computers, classrooms etc.

##### Response:

PHCET has transparent and robust procedures for the utilization and maintenance of all physical, academic and support facilities. This is communicated to all concerned stake holders. The detailed procedure is given below.

##### 1. Utilization of resources and facilities:

- Availability of resource is verified with the concerned In-Charge.
- Permission for the utilization is taken from the respective authorities.
- It is communicated in writing to the In-Charge to make the resource available.
- It is the duty of the person who has generated the request to take care of the resources and return after use if it is not a consumable.

##### 2. Maintenance of resources and facilities:

The persons responsible regularly check the availability and usefulness of the resources and identify insufficient consumables and non-functioning capital items. It is communicated to the respective authority and appropriate action is taken as per the protocols.

There are designated Lab In-charge, Workshop In-charge and Lab assistant as per need. Duties and responsibilities of the Laboratory /Workshop Assistant include

- Maintaining the Dead Stock Registers and Consumables Registers, estimating and procuring required equipment and consumables for the laboratories, making the infrastructure facilities in the labs adequate before the start of every semester.
- Assisting the Lab In-charge for smooth functioning of the laboratories and for maintenance and care of resources/services of the institute.

- In order to deal with theft/damage, etc., the Lab In-charge and Lab Assistants are required to report the matter in writing immediately to the HoD as soon as they come to know about the missing/damaged item and shall note down the missing items in the respective Lab Register.
- If the students are responsible for the loss/missing item, then an amount equal to the two times the cost of the item plus the contingency charge as fine shall be levied from the concerned students. Students shall not be allowed to purchase and bring the item on their own, as compensation for the loss/missing item.

The college has adequate number of well-maintained computers, servers, routers, switches, etc., with all necessary System and Application software for the requirements of various department connected on LAN with a student computer ration of 4:1 and an Internet bandwidth of 100 Mbps with 1:1 connection. All required facilities like printers, scanners, etc., are also available in sufficient numbers for the use of students, teachers and staff. All mentioned physical facilities are supported by continuous electrical supply with two 250 KV stand by generators. The supporting systems are well-maintained both by in-house teams and outsourced agencies for undisturbed, and on demand performance.

In order to develop excellence in academics a well maintained and regularly updated library is essential. PHCET has an aesthetically pleasing and resource rich library with a separate section for digital resources. The Library committee, headed by a senior Professor, makes all important decisions to ensure continued availability of knowledge resources for students and faculty. Library also has arrangements and protocols like laboratories.

A well-equipped Gym, Sport Authority of India supported indoor and outdoor sports facilities with qualified coaches are available.

## Criterion 5 - Student Support and Progression

### 5.1 Student Support

#### 5.1.1 Average percentage of students benefited by scholarships and freeships provided by the Government during the last five years

**Response:** 36.39

5.1.1.1 Number of students benefited by scholarships and freeships provided by the Government year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
1600	1285	961	722	447

File Description	Document
Upload self attested letter with the list of students sanctioned scholarships	<a href="#">View Document</a>
Average percentage of students benefited by scholarships and freeships provided by the Government during the last five years	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

#### 5.1.2 Average percentage of students benefited by scholarships, freeships, etc. provided by the institution besides government schemes during the last five years

**Response:** 3.02

5.1.2.1 Total number of students benefited by scholarships, freeships, etc provided by the institution besides government schemes year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
94	36	72	98	94

File Description	Document
Any additional information	<a href="#">View Document</a>

#### 5.1.3 Number of capability enhancement and development schemes –

1. For competitive examinations
2. Career counselling
3. Soft skill development
4. Remedial coaching
5. Language lab
6. Bridge courses
7. Yoga and meditation
8. Personal Counselling

A. 7 or more of the above

B. Any 6 of the above

C. Any 5 of the above

D. Any 4 of the above

**Response:** A. 7 or more of the above

File Description	Document
Details of capability enhancement and development schemes	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>
Link to Institutional website	<a href="#">View Document</a>

#### 5.1.4 Average percentage of student benefited by guidance for competitive examinations and career counselling offered by the institution during the last five years

**Response:** 38.66

5.1.4.1 Number of students benefited by guidance for competitive examinations and career counselling offered by the institution year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
1151	1050	930	821	1139

File Description	Document
Number of students benefited by guidance for competitive examinations and career counselling during the last five years	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

**5.1.5 Average percentage of students benefited by Vocational Education and Training (VET) during the last five years****Response:** 20.28

## 5.1.5.1 Number of students attending VET year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
677	631	581	553	313

**File Description****Document**

Details of the students benefited by VET

[View Document](#)

Any additional information

[View Document](#)**5.1.6 The institution has a transparent mechanism for timely redressal of student grievances including sexual harassment and ragging cases****Response:** Yes**File Description****Document**

Minutes of the meetings of student redressal committee, prevention of sexual harassment committee and Anti Ragging committee

[View Document](#)

Details of student grievances including sexual harassment and ragging cases

[View Document](#)

Any additional information

[View Document](#)**5.2 Student Progression****5.2.1 Average percentage of placement of outgoing students during the last five years****Response:** 11.59

## 5.2.1.1 Number of outgoing students placed year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
39	51	84	50	56

File Description	Document
Self attested list of students placed	<a href="#">View Document</a>
Details of student placement during the last five years	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

### 5.2.2 Percentage of student progression to higher education (previous graduating batch)

**Response:** 2.21

5.2.2.1 Number of outgoing students progressing to higher education

Response: 17

File Description	Document
Upload supporting data for student/alumni	<a href="#">View Document</a>
Details of student progression to higher education	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

### 5.2.3 Average percentage of students qualifying in State/ National/ International level examinations during the last five years (eg: NET/ SLET/ GATE/ GMAT/ CAT/ GRE/ TOEFL/ Civil Services/State government examinations)

**Response:** 19.83

5.2.3.1 Number of students qualifying in state/ national/ international level examinations (eg: NET/ SLET/ GATE/ GMAT/ CAT/ GRE/ TOEFL/ Civil services/ State government examinations) year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
9	29	41	33	38

5.2.3.2 Number of students who have appeared for the exams year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
137	141	167	154	146

File Description	Document
Upload supporting data for the same	<a href="#">View Document</a>
Number of students qualifying in state/ national/ international level examinations during the last five years	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

### 5.3 Student Participation and Activities

#### 5.3.1 Number of awards/medals for outstanding performance in sports/cultural activities at national / international level (award for a team event should be counted as one) during the last five years.

**Response:** 10

5.3.1.1 Number of awards/medals for outstanding performance in sports/cultural activities at national/international level (award for a team event should be counted as one) year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
2	4	1	1	2

File Description	Document
Number of awards/medals for outstanding performance in sports/cultural activities at national/international level during the last five years	<a href="#">View Document</a>
e-copies of award letters and certificates	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

#### 5.3.2 Presence of an active Student Council & representation of students on academic & administrative bodies/committees of the institution

**Response:**

The growth and development of any academic institution depends on the energy, enthusiasm and commitment of the principal stakeholders namely the students. The opportunities that are made available for the young to apply themselves for enhancing the quality of their academic life, realization of their innate talents, the achievement of human potential, ownership of one's own academics are important aspects that determine the credibility of the Institution.

From its inception PHCET realized that almost anything is possible with the whole hearted involvement,

ownership and participation of the students. Therefore, the importance of students' leadership can never be overstated. Hence, PHCET involves students in all activities such as academics, cultural activities, entertainment, sports, social activities of the college, etc. PHCET has a highly decentralized students council that operates at three levels namely class, year, specialization (Department) and finally at the College level

### **Structure:**

PHCET being large academic Institution with seven departments and over 2600 students, a decentralized and federal structure is adopted for the formation of its students council. This gives a fair representation and voice for various segments of students.

. Every class elects two class representatives (One boy, one girl). They in turn elect departmental council of five students. From among the class representatives of a department, the departmental council is formed as per the stipulated structure. These elected members of all departments come together and elect the President, Secretary, lady representative, one representative belonging to SC/ST/ DT/NT/OBC to form the students' council of the college.

One senior teacher is appointed by the Principal to act as coordinator of the Students' Council.

### **Champions of causes:**

The students under the aegis of the students' council champion various causes and lead the activities of the college that are both curricular and extracurricular. For example, Student Seminars, Public Speaking Forum, Coding Club, Sports, Chapters of Professional Bodies such as CSI, ACM, IETE, etc., Tech Fest, Cultural Fest, Student development programmes, Robogiria, Elocution Competitions, Celebration of National and International days, and Remembrances of great personalities, Constitution Day celebrations, etc., are all spearheaded by the students council.

### **Democratic Functioning and Governance:**

Decentralized, federal and democratic way of functioning is learned by students early in life by their participation in school and college councils. They also learn and develop management skills, governance, team work, and various other desirable human traits through this.

### **Owning the Brand:**

The benefits of a good quality education are manifold. Good quality education is imparted in manifold ways. PHCET is determined to impart good quality education. Opportunities and participation of students to give shape to their academics is one of them. The effort is to enable the students own PHCET brand boldly and the students' council is the best body to own the brand 'PHCET'

File Description	Document
Any additional information	<a href="#">View Document</a>
Link for Additional Information	<a href="#">View Document</a>

**5.3.3 Average number of sports and cultural activities/ competitions organised at the institution level per year****Response:** 4

5.3.3.1 Number of sports and cultural activities / competitions organised at the institution level year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
5	5	6	2	2

File Description	Document
Report of the event	<a href="#">View Document</a>
Number of sports and cultural activities / competitions organised per year	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

**5.4 Alumni Engagement****5.4.1 The Alumni Association/Chapters (registered and functional) contributes significantly to the development of the institution through financial and non financial means during the last five years****Response:**

Alumni Association, administered by an Alumni Committee is very active in promoting interactions and camaraderie among the current students, faculty and the management. PHCET takes great effort in maintaining an active Alumni Network. The aim of this platform is to facilitate easy communication amongst the alumni, reconnect with their Alma-Mater and to add value to current student community. This association helps in placement, project work and Industry-Institution interaction. Further, some of the alumni mentor our students both for academics and project work.

The alumni meets aim to foster a sense of community among alumni and gives a sense of connectedness to PHCET. The professionals exchange information about their work, share experience and help each other for networking needs, hiring, referrals for specific expertise, or looking for a new job, etc. Young students meet with alumni of their department and that enables them to plan their career with new social connections.

Alumni meets have been popular and help build bonds among professionals and interaction on new developments in diverse areas of interest. Promotion and fostering of interaction amongst the alumni and the faculty is taken seriously. During formal gathering and while visiting PHCET individually, the alumni are always received with warmth.

Some of the alumni participate in the developmental activities of PHCET during their time off to guide the students with their projects that are of great significance. Both Ms. Osheen Srivastava and Mr. Nayan Tare help with the “Automatic Stamping Machine” project and play a significant role in it. Informally and at personal level some alumni have helped their juniors with financial assistance and sponsorship of events, etc. Many of them have remained anonymous. It is hoped that this would increase over the years.

As they become more and more successful and wealthy, many more alumni may come forward to institute and organize scholarships and funds to help the needy and deserving students of PHCET. This could also include prizes and awards for outstanding project work, research papers or other professional activities by the teachers, alumni and the students and to suitably recognize outstanding social and community services rendered.

It is not always financial assistance that one looks from alumni. Their warmth, appreciation for what they have received from the Institution and their time to participate in the academic and social life and the involvement and guidance for their juniors are most respected. Senior alumni help in organizing specialized training sessions for students and faculty members to expose them to contemporary technologies and skills. Employment and placement related support and information about available opportunities are great input and contributions from alumni. Alumni network enables them for changing jobs and make upward mobility easier.

Alumni database is created and updated meticulously to have latest information of all alumni. The alumni bring their experience and even financial contribution to PHCET and in turn gain by the affiliation and other recognitions that are available at higher echelons. Though a young institution, PHCET has been successful in attracting and retaining its alumni.

File Description	Document
Any additional information	<a href="#">View Document</a>
Link for Additional Information	<a href="#">View Document</a>

#### 5.4.2 Alumni contribution during the last five years(INR in Lakhs)

? 5 Lakhs

4 Lakhs - 5 Lakhs

3 Lakhs - 4 Lakhs

1 Lakh - 3 Lakhs

**Response:** 4 Lakhs - 5 Lakhs

File Description	Document
Alumni association audited statements	<a href="#">View Document</a>

**5.4.3 Number of Alumni Association / Chapters meetings held during the last five years****Response: 5**

## 5.4.3.1 Number of Alumni Association /Chapters meetings held year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
1	1	1	1	1

<b>File Description</b>	<b>Document</b>
Number of Alumni Association / Chapters meetings conducted during the last five years	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>
Report of the event	<a href="#">View Document</a>

## Criterion 6 - Governance, Leadership and Management

### 6.1 Institutional Vision and Leadership

#### 6.1.1 The governance of the institution is reflective of an effective leadership in tune with the vision and mission of the institution

##### Response:

Pillai HOC College of Engineering and Technology envisions itself as a wholesome academic institution and a vibrant place of learning. It is established to admit, educate and train engineers who are academically prepared to serve and make valuable contributions to the society. This requires preparation that involve both physical and mental. Hence, they should benefit from the institute's infrastructure and experience to become responsible professionals in their chosen area of engineering.

PHCET also strives to attract, develop and retain committed teachers, scholars and professionals from diverse backgrounds. It is their work that gives them visibility beyond the classroom. They make significant difference to the lives of their students and community.

In all its endeavours, PHCET is focussed on quality engineering education and has evolved continuously over years to meet this quest. Building quality consciousness in all its stakeholders has become an obsession and has been brought to a level of acceptability. There is ample proof and evidence for the miles stones achieved so far. In 2017, the two eligible departments, Computer Engineering and Mechanical Engineering were accredited by NBA.

Quality alone will make PHCET an institution of national importance. For this a three pronged approach is vital. Strong leadership that includes various stakeholders, federal structure of administration and involvement of teachers in decision making and the students council.

For an Institution that is just ten years to achieve so much; UG , PG and Ph. D programmes, seven departments of various engineering specialization, etc., and accreditation of the two of the two eligible departments is an indication of the quality of leadership and the vision that guides.

All major academic management decisions are taken at the department level with the full participation of teachers. The student-centric methods for teaching and learning are championed by teachers. The steady growth and expansion since inception in 2009-10 in quantity and quality is a clear illustration of the strategic planning and its implementation in pursuance of the vision of PHCET

There are 15 committees that help manage various academic, administrative, co-curricular and extra-curricular activities that make PHCET vibrant. The teachers are the co-ordinators and members of these committees.

The federal structure helps to build the 'Brand PHCET' in multiple ways with the teachers' participating and championing various causes. The functioning of the college has considerably facilitated access, availability and problem solving facility for all stakeholders. The principal beneficiaries of this system have been the students and teachers making possible communication both top down and bottom up - Principal to Heads of the Departments to teachers and Students and vice versa.

The students' council is the third pillar of PHCET. With the change in the statutory requirements and procedures of the formation of the students' council PHCET used the opportunity to create a truly federal and effective students' council with proportionate representation. There are departmental councils to meet the specific needs of each department and specialization. This also gives opportunities to students to learn democracy in action and give expression to leadership qualities.

File Description	Document
Link for Additional Information	<a href="#">View Document</a>

### 6.1.2 The institution practices decentralization and participative management

#### Response:

PHCET by design has a federal structure and each department is treated as an independent entity with devolution of powers to the Heads of the departments. Each department makes its own budget and administers it. The academic management system and the freedom of a department are within the overall structure and guidelines of the University of Mumbai. Considering the size of PHCET with seven departments of specialization and the common pool of students of the first year, there is no better model of governance to be effective in the service it provides.

PHCET is built on the belief and commitment that every student who enters its portals leaves as a capable and socially responsible engineer no matter how they were when they entered PHCET. This requires administrative and governance processes that meet the challenges in managing large number of young people with diverse needs, and demographic, gender and social profile.

Rather than stress procedures of participation, the substantive content of decision-making and academic management needs attention. The internal administration of a department is entirely up to the Head of the Department, the faculty members and its students. The academic administration is shouldered by the class coordinators (CCs) and other faculty members. The academic management of the departments vary as per their needs.

Each department in turn also practices decentralization thus bringing greater transparency and better provision of services that address the specific needs of each department. The formation and functioning of the students' council of PHCET – democratic representation and participation of students in the academic and administrative governance of the college is a clear case of decentralization.

PHCET has a highly decentralized students' council that operates at three levels namely class, year, specialization (Department), and at the College level and addresses the needs of every group of students.

Every class elects two class representatives (One boy, one girl). All class representatives of a department elect the departmental council. The elected members of all departments and elect the President, Vice-President, Secretary, Vice-Secretary, Lady representative, one representative belonging to SC/ST/DT/NT/OBC, Sports Secretary and Cultural Secretary to form the students' council of the college.

The departmental councils are a great source of energy and responsibility and provide opportunities for

students to assume leadership roles. It is through these vehicles of human transformation that the students imbibe values in ethical leadership, responsiveness, patriotism, self-discipline, integrity, ingenuity, creativity, responsibility, compassion through interactions in classrooms and outside, conflict resolution, cultural and sports activities, etc.

As education is becoming an inquiry process, PHCET is striving to make the students self-reliant inquirers and evaluators of information. These efforts have been successful with the whole hearted effort and support of every participant and dealt in a highly decentralized way - 'to each according to one's needs and from each according to one's ability', in a manner of speaking. The faculty plays a pivotal role in all activities of PHCET and have substantial voice.

File Description	Document
Any additional information	<a href="#">View Document</a>
Link for Additional Information	<a href="#">View Document</a>

## 6.2 Strategy Development and Deployment

### 6.2.1 Perspective/Strategic plan and Deployment documents are available in the institution

#### Response:

PHCET was established with the singular purpose of serving the community. The strategic and developmental plans of PHCET until now can be categorized into three phases. In first two phases it has achieved more than it could dream.

**Phase I:** (2008-09 – 2012-13) Formative years: Creating Infrastructure and starting of academic programmes.

The first phase of perspective plan was to ensure that college is well established on sound principles of continued and unrelenting efforts for academic excellence and community service. Five undergraduate and one Masters Programmes were started.

**Phase II:** (2013-14 – 2017-18) : Expansion, Consolidation and 'Quality Consciousness'

The effort has always been to introduce need based programmes that suit the milieu and the environment where PHCET is located. Two more undergraduate and two more Masters Programmes were also started. PHCET was created in a mould that has, 'quality', as its insignia.

**Quality requires evidence and stamp of approval from legitimate and competent authority. Hence, PHCET in 2017-18, subjected itself to the scrutiny of National Board of Accreditation (NBA) for the two large and eligible departments. Computer and Mechanical Engineering Departments were accredited in 2017-18 for a period of three years - a validation of the 'quality mantra' that PHCET professes.**

Hence, in the second phase ‘Quality Consciousness’ became part of the everyday jargon.

**Phase III:** (2018-19 – 2022-23): Building people, Building Quality

The third phase of the strategic plan looks at the future and builds strength in the institution by building its human capital and taking quality initiatives. PHCET is engaged in continuous and forward looking response to the transformations that are happening in the society both local and global most of all in the domain of knowledge expansion and its impact on all aspects of human life.

Several new initiatives are adopted for enabling students and empowering employees. Faculty lecture series, and IELTS examinations for improving faculty communication, certification in MOOCs courses, Special Interest Groups (SIGs) and research projects for professional growth, and nearly fifty student-centric methods for enhancing learning experiences are a few of them.

**Quality needs continued scrutiny.** Hence PHCET is applying for accreditation of National Assessment and Accreditation Council (NAAC) in 2018-19.

“Quality Consciousness, Competitiveness and Future ready”, are integral to PHCET. PHCET tries to anticipate and evaluate the impact latest technology have on the academia in the future and prepare its students for jobs that do not exist today and make them understand that they cannot confine themselves to the area of their specialization of the present.

PHCET has been moving in the direction in which it would like its students to move. Several projects that require multidisciplinary input and requiring collaborative work necessary are in progress. The struggle is to develop engineers, who can consistently deliver, having entrepreneurial edge, business instincts, and inspiring leadership with social commitment. Empower Students and faculty to own ‘**Brand PHCET**’ in diverse ways. A lot is achieved in ten years. More are on the anvil. Relentless effort to be quality conscious - build people - build quality

File Description	Document
Any additional information	<a href="#">View Document</a>
Link for Additional Information	<a href="#">View Document</a>
Strategic Plan and deployment documents on the website	<a href="#">View Document</a>

**6.2.2 Organizational structure of the institution including governing body, administrative setup, and functions of various bodies, service rules, procedures, recruitment, promotional policies as well as grievance redressal mechanism**

**Response:**

As can be seen from the diagram PHCET is part of MES which has a hierarchical organizational structure.

The Apex body - the Governing body - has fourteen members comprising of the Chairman, Secretary

MES, Chief Operating Officer MES, Member - Management Board, AICTE Representative WRO, AICTE, Mumbai, DTE Representative - DTE, Maharashtra, University Representative UOM, Fort Mumbai, Three Industry Representatives, One R& D Institution representative, Two members from reputed academic institutions and the Principal of PHCET, the Member Secretary.

The Principal is the academic and administrative head of PHCET and reports to both the chairman, and COO. He has under him the Heads of various departments, the Registrar, the Librarian, the Controller of Examinations, the Heads of various statutory and other committees, and the Students' Council. Each Head of the department manages one's department with the Faculty, the Class Coordinators and faculty in charge of Laboratory. There are technical assistants and attendants for various jobs. The Principal has regular meeting with the Heads of the Departments and the Students Council and periodic meeting with the entire staff.

The Registrar manages the administration and reports to the Principal. The Registrar's Office, Finance and accounts, Sports, Maintenance and Hostel come under the Registrar. The delegation of powers and responsibilities are well defined and makes it simple for various stakeholders to get their problems solved and issues resolved.

File Description	Document
Any additional information	<a href="#">View Document</a>
Link for Additional Information	<a href="#">View Document</a>

### 6.2.3 Implementation of e-governance in areas of operation

1. Planning and Development
2. Administration
3. Finance and Accounts
4. Student Admission and Support
5. Examination

- A. All 5 of the above
- B. Any 4 of the above
- C. Any 3 of the above
- D. Any 2 of the above

**Response:** A. All 5 of the above

File Description	Document
Screen shots of user interfaces	<a href="#">View Document</a>
ERP Document	<a href="#">View Document</a>
Details of implementation of e-governance in areas of operation Planning and Development, Administration etc	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

#### **6.2.4 Effectiveness of various bodies/cells/committees is evident through minutes of meetings and implementation of their resolutions**

##### **Response:**

Uplifting someone is always going to the level of the person. It is not done from a position of power or strength but from a position of empathy and understanding the difficulty of someone. Always being conscious of its commitment and the enormous challenges it faces to fulfil it, various authorities of PHCET pondered different ways of improving the academic performance of the students. This gave birth to novel idea of 'Concept Inventory (CI)' based teaching and learning. The process involves every faculty. For every course that a faculty teaches one would annotate every concept in the syllabus with material collected from standard references and also give the exact reference in the book including page and line. A faculty may cite several references for the same concept. In some cases one may give illustrative examples too. Besides CI also provides the number of pages along with the page numbers in the book in which this concept is best explained. An estimate of time that an average student would take to study the concept and understand is also indicated so that the learner can evaluate one's progress. A list of books used for building the inventory is also made available for the benefit of those who want to do independent study.

There is a major gap between aspirations and performance of the students and this coupled with the Language barrier – the inability to communicate in the language of business - English effectively and fluently, hampers the learning, power of expression and also passing in examinations. And in turn reduces ones opportunities in placement and employability. CI broadens the outlook of the students with regard to their study and the kind of preparation they need to do in an engineering programme. Every student gets a copy of the Concept inventory for each course of the semester.

Concept inventory is not a static document. A recent innovation has been to introduce five objective type questions for each concept. The concept to be taught and the questions would be send by WhatsApp to students at least a day prior to the students in a flipped classroom manner. The discussions in the class are to generate and increase the discovery process to enrich the teaching learning experience.

The faculty has opportunity to augment it especially when a new faculty teaches a course for which the CI exists or is already prepared by somebody else. Students can also be encouraged to contribute to it. As there are ample resources available in MOOCs and social media and other resources one can make CI a rich resource the students can regularly use. The details of the work done in PHCET are available as a monograph in hard copy in the college. As the syllabi of the engineering programmes are revised by the

University, the concept inventory for new curriculum is also under revision. Imagination, innovativeness and industry of faculty and students are the only boundary for a very useful teaching learning tool such as concept inventory.

File Description	Document
Any additional information	<a href="#">View Document</a>
Link for Additional Information	<a href="#">View Document</a>

## 6.3 Faculty Empowerment Strategies

### 6.3.1 The institution has effective welfare measures for teaching and non-teaching staff

#### Response:

The following are the service benefits and welfare measures extended to the staff of the PHCET:

1. Establishment of on-campus Skills development and training centre in collaboration with Government of India and the Government of Maharashtra for training students and staff
2. Employment of local people for selected jobs.
3. Provision of canteen in the campus.
4. Subsidized food in the canteen.
5. All teaching and non-teaching faculty members are provided free transport facility.
6. Special leave is offered to all faculty members during their marriage.
7. Maternity leave facility for all employees.
8. Paternity leave facility for all employees.
9. Annual vacation for teaching and nonteaching staff.
10. Provision of 50% concession in fees to faculty members pursuing Ph.D.
11. Provision of on-campus Gym facility.
12. Special sports coaching facility sponsored by Sports Authority of India (SAI) for children of employees and neighbouring children from socio-economically challenging background.
13. First aid centre with a dedicated room and beds and doctor on call..
14. Faculty members (nursing mothers) are permitted flexi hours.
15. Provision for day care facility for children of employees.
16. Internal Faculty Development Programs.
17. External Faculty Development Programs (ISRO, IIT and RCF).
18. Industrial training for faculty (RCF).
19. Teaching assistantship for faculty members pursuing Masters in engineering
20. Financial support for faculty members pursuing Ph.D. from well-known Institutions such as IIT and VJTI.
21. Special leave for faculty members pursuing Ph.D.
22. Special leave for research paper presentations and participation in International Conferences.
23. Provident fund for all employees with contributory pension.
24. Financial assistance for travel to important International conferences and seminars
25. Provision of 24/7 on-campus security.

- 26.Provision of Counselling Centre
- 27.Provision of ample secure parking facility for private vehicles of faculty and staff.
- 28.Safe potable water facility on all floors.
- 29.Group Insurance for students
- 30.Sponsorship for STTP /seminars/ workshops at national and international level.
- 31.Provision of Optional holidays.
- 32.Sanitary Napkin Vending Machine
- 33.Excellent facilities for multiple sports and athletics.

Automated lifts that move to the nearest floor in order to avoid people getting trapped in the lifts during unexpected power outages

File Description	Document
Any additional information	<a href="#">View Document</a>
Link for Additional Information	<a href="#">View Document</a>

### 6.3.2 Average percentage of teachers provided with financial support to attend conferences/workshops and towards membership fee of professional bodies during the last five years

**Response:** 5.94

6.3.2.1 Number of teachers provided with financial support to attend conferences / workshops and towards membership fee of professional bodies year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
12	12	13	11	10

File Description	Document
Details of teachers provided with financial support to attend conferences,workshops etc during the last five years	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

### 6.3.3 Average number of professional development /administrative training programs organized by the institution for teaching and non teaching staff during the last five years

**Response:** 16

6.3.3.1 Total number of professional development / administrative training programs organized by the Institution for teaching and non teaching staff year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
27	23	14	13	3

File Description	Document
Reports of the Human Resource Development Centres (UGC ASC or other relevant centres).	<a href="#">View Document</a>
Details of professional development / administrative training programs organized by the Institution for teaching and non teaching staff	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

#### 6.3.4 Average percentage of teachers attending professional development programs viz., Orientation Program, Refresher Course, Short Term Course, Faculty Development Program during the last five years

**Response:** 49.68

6.3.4.1 Total number of teachers attending professional development programs, viz., Orientation Program, Refresher Course, Short Term Course, Faculty Development Programs year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
166	135	120	69	22

File Description	Document
IQAC report summary	<a href="#">View Document</a>
Details of teachers attending professional development programs during the last five years	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

#### 6.3.5 Institution has Performance Appraisal System for teaching and non-teaching staff

**Response:**

**Teaching and Non-Teaching Staff performance Appraisal system:**

- Faculty performance appraisal system

A performance measurement system is developed to support the objective assessment of the core functions of a faculty as a teacher, mentor, and researcher. Participation, monitoring, guiding Co-Curricular, Extension and Professional Development activities, etc., are considered and given due credit.

A well planned form has been created to aid the assessment and for meticulous documentation. Each faculty does a self-assessment followed by the evaluation of the concerned superior. The criteria for evaluation takes into account a large number of parameters with appropriate maximum marks. Marks for each criteria enables make the evaluation more objective and the assessee and the assessor are able to substantiate their judgment and arrive at agreement in case of a deviation .

Performance in lectures, seminars, tutorials, practical [60], imparting knowledge as per curriculum with the prescribed material and syllabus enrichment with additional resources [20], use of participatory and innovative teaching-learning methodologies; updating of subject content, course improvement [50], examination related work [25], co-curricular and extension activities [40], contribution to corporate life and management of the Institution [50], professional development related activities [50] are evaluated.

Research and academic contributions assessment of faculty members consists of papers (Published in Journals) and other Research Publications [150], research projects- sponsored projects and consultancy projects [55], completed projects quality evaluation and project outcome/outputs [95], research guidance [45], training, courses and conference/ seminar/ workshops attended [55] are also the parameters on which a teaching faculty is evaluated.

The performance appraisal and development system calculates performance of faculty in each academic year. A faculty member is assessed on a total of 750 marks.

The aggregate marks are used for taking action viz., reward, award, promotion, etc.

Based on performance appraisal faculty are also counselled to improve and to make progress.

- **Non-Teaching staff performance appraisal system**

The function of the non-teaching staff is to provide administrative support for carrying out academics smoothly in PHCET. There are three broad categorizations of staff depending on where one is located, college office, department or laboratory. The hierarchy is registrar, office superintendent, officers, accountant in that order of responsibilities. The call of duty varies with hierarchy.

The staff assist the teaching learning process in the class room and laboratories and support co-curricular, extension and professional development related activities, setting up experiments, maintenance and repairs, and ensures the cleanliness of classrooms, laboratories and administration area. Non-teaching staff performance is assessed in every academic year based on fourteen parameters for a total of 150 marks.

Attitude towards co-workers [25], attitude towards public [20], perceptivity and sensitivity [10],

staff/student relation [10], dependability [5], attendance/job performance [20], initiative [15], response to supervision [5], judgment/decision making [5], method of expression [5], potential [5], innovation and creativity [5], job knowledge [15], related accomplishments [5] are the parameters on which performance assessment is carried out. Assessment uses a questionnaire based on the above specified parameters and are evaluated on a five point scale. The assessment is used for promotions and increments.

File Description	Document
Any additional information	<a href="#">View Document</a>

## 6.4 Financial Management and Resource Mobilization

### 6.4.1 Institution conducts internal and external financial audits regularly

#### Response:

The long term sustainability of any organization is directly related to its financial health. The financial health is determined by the financial discipline and accounting practices. Budgeting, accounting, and auditing are the three pillars on which financial discipline of organizations rests. In an environment rampant with fudging and frauds, there are stellar organizations with unimpeachable integrity. Mahatma Education Society (MES), the parent body of Pillai HOC College of Engineering and Technology (PHCET) is one of them. The fact that MES has been in existence without any blemish and has created and managed forty eight renowned educational Institutions despite a plethora of regulations, regulatory bodies and compliances to follow is a proof of the quality of its accounting practices and its law abiding nature.

PHCET has inherited the same financial discipline, accounting practices, audit procedures and abides by the requirements and stipulations of various regulatory authorities. The audited accounts of PHCET is annually scrutinized by the Shikshan Shulk Samiti (Fee regulating body) of the Directorate of Technical Education (DTE), Government of Maharashtra.

Auditing processes of PHCET takes place in two stages namely, Internal audit and External Audit. These auditors are belonging to different auditing firms. The auditors re-appointed by the Governing body each year. The Internal audit is carried out by CA Susanna & Co. and the external auditors are Mr. A.S. Majumdar & Co. The Internal auditors are in regular contact with the accounts department and visits at least once in two weeks and observes and audits the working.

Most of the transactions are in non-cash mode and is done using Tally ERP 9 Software. SensysEasyPay from Sensys Technologies Pvt. Ltd., is used for salary related computations and disbursement and also for Income Tax purposes including generating of Form XVI. The salary of each employee is directly credited into their bank accounts and Easy Pay is used to generate the quarterly income tax returns of the taxes deducted at source for various activities including monthly salary.

Budgeting is a fairly complex activity in PHCET considering the seven departments with varying requirements. Each department creates its own budget and the budgets of all departments are consolidated at the college level. Budget preparation and accounting are specially supervised by well qualified and

experienced persons of the level of deputy finance officer.

PHCET is proud to record that no audit objection has ever been reported in its ten years of existence as the accounting processes and practices are meticulous and carried out scrupulously by capable people. Regular monitoring of fund flow also helps to monitor the financial health of the college and also helps in timely meeting of financial commitments to all debtors and most of all payment of salaries on time to its employees. Thus, PHCET has always been a financially prudent institution.

File Description	Document
Any additional information	<a href="#">View Document</a>
Link for Additional Information	<a href="#">View Document</a>

#### 6.4.2 Funds / Grants received from non-government bodies, individuals, Philanthropists during the last five years (not covered in Criterion III) (INR in Lakhs)

**Response:** 56.2

6.4.2.1 Total Grants received from non-government bodies, individuals, philanthropists year-wise during the last five years (INR in Lakhs)

2017-18	2016-17	2015-16	2014-15	2013-14
12.44	20.64	16.90	6.22	0

File Description	Document
Details of Funds / Grants received from non-government bodies during the last five years	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

#### 6.4.3 Institutional strategies for mobilisation of funds and the optimal utilisation of resources

**Response:**

PHCET is a linguistic minority institution. Therefore, the funding required for running the college is mostly self-generated. The fees approved, by the Shikshan Shulk Saminti (Fee regulating body) of the Directorate of Technical Education (DTE), Government of Maharashtra, that the students pay is the main source of funds for the operational purpose. The tuition fee and the development fee are the two items of fees available for operational expenditure of the college.

Various activities and events organized in the college are sponsored by various agencies and differ from year to year. Students benefit from several categories of scholarships from both governmental and non-

governmental sources. Good academic performers pay comparatively less fees for good quality education.

PHCET has also been making efforts to get scholarships and other financial support from private agencies, NGOs, private and public charitable trusts, etc., for students from financially not secured families. These scholarships and financial support is directly disbursed by the donor agency to the recipients. PHCET has been an enabler and facilitator and makes efforts to identify and interact with many such donors.

In fact, PHCET has been successful in this effort. Bombay Community Public Trust (BCPT) helped several girl students with partial funding of their college expenses. FramjeeCawasjee Institute has been supporting a large number of final year engineering students both boys and girls with good academic record from and from financially poor background.

The University of Mumbai provides funds for minor research projects. Several income generating projects and consultancy assignments are done by the faculty and they are charged separately. The College organizes Industry sponsored and paid conferences and seminars, workshops, etc. These are self-supporting programmes and the surplus that is created is pooled back to organize more such programmes

File Description	Document
Any additional information	<a href="#">View Document</a>
Link for Additional Information	<a href="#">View Document</a>

## 6.5 Internal Quality Assurance System

### 6.5.1 Internal Quality Assurance Cell (IQAC) has contributed significantly for institutionalizing the quality assurance strategies and processes

#### Response:

The quest for quality in all its operations has been the hallmark of PHCET. Many of the developments and the consistent growth are the proof. However, IQAC as formal body was created in July 2018. And it has brought renewed strength into the processes and procedures, and even to the existing practices. Two activities namely, SIG based knowledge series and Faculty development programmes are described as examples of initiatives that are realized due to the inputs from IQAC.

SIG based knowledge series: Thirty two Special Interest Groups (SIGs) are created based on the interest and the professional strength of the faculty. The idea is to encourage the faculty and students to pursue areas of their interest and do serious academic research. This induces the students to identify and develop interest in areas where they may pursue advanced studies.

The first task the SIGs under took is to collate the projects completed in the last five years according to SIG and document it as a monograph. The second task of the SIG is to do a survey of the field and create a survey paper that would give the reader insight into how the field has evolved over a period of time. The results of these efforts are visible. Details of the SIGs are available on the website. Going forward the SIGs

will be a source of great academic strength for PHCET.

**Faculty Development:** It is of immense concern for PHCET. Building people is an integral part of building quality as only quality conscious people can usher in quality in an institution. Several initiatives are in place for the development of the faculty both professionally and personally. The effort is to get all faculty members to an internationally accepted level of professional communication.

In the beginning of the semester each faculty makes a presentation for ten minutes on a topic that was taught by the person in the previous semester. The performance is assessed by two senior faculty members on five parameters namely Content, Delivery, Communication, Engagement and English Language Skills. Each parameter is evaluated on a ten points scale. The average score of each person is the performance index of the person. The faculty were grouped into various levels of achievement depending on the performance. Each level was separately addressed regarding expected improvements in the semesters ahead. Each individual's score was given personally by the Principal. A feedback of the faculty was taken for improvement of the process.

A novel activity introduced in the college is mediation during lecture hours. Mid-way through the lecture the students and faculty meditate for five minutes. If it is a two hour lecture the meditation is for ten minutes at the end of the first hour. A monitoring system has been evolved to ensure the adherence to the practice. Students and faculty were introduced to meditation through practical sessions done in groups.

IQAC has made significant contributions to the efforts of PHCET for its stakeholders in the form of new ideas and practices

File Description	Document
Any additional information	<a href="#">View Document</a>
Link for Additional Information	<a href="#">View Document</a>

### **6.5.2 The institution reviews its teaching learning process, structures & methodologies of operations and learning outcomes at periodic intervals through IQAC set up as per norms**

#### **Response:**

As new methodologies and paradigms of teaching learning are emerging, creating new, and emulating the best should be mind-set of any true academic. The ICT, the Internet and global communication have facilitated many such avenues for the modern academic. The IQAC has induced PHCET to put to good use the advantages and benefits of our times to review its teaching learning processes and other operations.

Two examples that may be cited are the use of MOOCs by both faculty and students, and improving the professional communication with International English Language Testing System (IELTS) certification.

#### **MOOCs for the faculty and students:**

Every faculty of PHCET has to complete one MOOCs course of their interest each semester. This would

substantially improve the teaching skills and ability of the faculty. Besides being a self-test, it is also an eye opener for one to compare oneself with some of the best in the world and assiduously strive to emulate people like Prof. Walter Levin of MIT in teaching. There are several faculty members who have acquired certifications in several MOOCs courses. The effort is to make it a norm more than exceptions. The students are also encouraged to acquire these certifications as it would add considerable value to their CV both for jobs and would benefit them in multiple ways in the times ahead.

PHCET has also created its own facility – Light Board Studio - for creating MOOCs courses in-house. Thus PHCET will also become a producer and provider of resources to the community of learners and won't be a passive consumer for long.

### **International English Language Testing System (IELTS) certification for faculty and students:**

The IELTS certification is a felt need due to the globalization. Though available in two modules 'Academic' and 'General training', PHCET has opted the 'academic' certification as it would impact the professional communication capability of its faculty and students. It becomes a necessity for one to be at an acceptable standard of communication as globally the language of business is English. The capability to communicate well in English adds considerably to the self-confidence of any person and gives a sense of self-worth and self-respect. Therefore, it is imperative that an academic institution like PHCET is sensitive to these realities and equip its graduates to face the world of work.

The IELTS certification of the faculty has manifold advantages for both faculty and students. As the faculty have already done a presentation and have been evaluated, and will continue to do presentations every semester and would be evaluated, the IELTS would be used only to test their reading, writing, and listening skills. The higher standards of performance of the teachers significantly impact the behaviour, performance and even aspirations of the students.

English language proficiency of its students is a challenge for PHCET. Therefore, it is important that all faculty and students do IELTS test without paying for it. The preparation and the process of certification would give benefits such as improvement in one's listening, reading and writing skills.

<b>File Description</b>	<b>Document</b>
Any additional information	<a href="#">View Document</a>
Link for Additional Information	<a href="#">View Document</a>

### **6.5.3 Average number of quality initiatives by IQAC for promoting quality culture per year**

**Response:** 1.8

#### **6.5.3.1 Number of quality initiatives by IQAC for promoting quality year-wise for the last five years**

2017-18	2016-17	2015-16	2014-15	2013-14
2	3	4	0	0

File Description	Document
Number of quality initiatives by IQAC per year for promoting quality culture	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>
IQAC link	<a href="#">View Document</a>

#### 6.5.4 Quality assurance initiatives of the institution include:

1. Regular meeting of Internal Quality Assurance Cell (IQAC); timely submission of Annual Quality Assurance Report (AQAR) to NAAC; Feedback collected, analysed and used for improvements
2. Academic Administrative Audit (AAA) and initiation of follow up action
3. Participation in NIRF
4. ISO Certification
5. NBA or any other quality audit

A. Any 4 of the above

B. Any 3 of the above

C. Any 2 of the above

D. Any 1 of the above

**Response:** B. Any 3 of the above

File Description	Document
e-copies of the accreditations and certifications	<a href="#">View Document</a>
Details of Quality assurance initiatives of the institution	<a href="#">View Document</a>
Annual reports of institution	<a href="#">View Document</a>

#### 6.5.5 Incremental improvements made during the preceding five years (*in case of first cycle*) Post accreditation quality initiatives (*second and subsequent cycles*)

**Response:**

PHCET has made substantial improvements in the last five years from 2013-14 to 2017-18. A look at the strategic plans and phase wise development of PHCET would illustrate it.

**Phase I** (2008-09 – 2012-13) the formative years were of creating infrastructure and starting of academic programmes and ensuring that the college was well established on sound principles of continued and unrelenting efforts for academic excellence, and community service. 2008-10 were early days of struggle in establishing an Engineering college in the middle of nowhere with first rate infrastructure.

Bachelors in Computer Engineering, Electronics and Telecommunication Engineering, Information Technology, and Mechanical Engineering were started in the academic year 2009-10. The first batch graduated in 2013-14.

**Phase II** (2013-14 – 2017-18) is the period of Expansion, Consolidation and Quality Consciousness. The effort has always been to introduce need based programmes that suit the milieu and the environment where PHCET is located. Hence, BE Electrical Engineering was started in 2014-15. Additional batches in Computer and Mechanical Engineering, special batches for direct second year were also started.

In a span of eight years it also started two Masters and two Ph.D. programs 2015 - 16. These are praiseworthy achievements for an organization that is born with considerable disadvantages. However, in the midst of coping with massive expansion and all associated parameters, it is very easy to lose focus and deviate from the original vision as well as justify depleting of quality by quantity.

Quality requires evidence and stamp of approval from legitimate and competent authority. Hence, PHCET in 2017-18, subjected itself to the scrutiny of National Board of Accreditation (NBA) for two of its large departments. Computer and Mechanical Engineering Departments were accredited in 2017-18 - a validation of the 'quality mantra' it professes.

On the academic front several quality improvement initiatives were started. Almost fifty students-centric methods are initiated and practised some of them very robust and became best practices in the college.

With the first batch graduating in 2012-13 the need for jobs, industry interaction and fulltime placement infrastructure, etc. were created. Mentoring of students by faculty members has always been of great importance in PHCET. However, it has been undergoing change and a more formal system is underway with well-structured documentation.

PHCET is in the process of creating an employability index. A student would be evaluated on thirty parameters to find out the suitability of one for employment. The assessment would be carried out over a period of four years starting when one enters PHCET to time one graduates. This assessment would help understand the progress one makes and would be linked to the mentoring process.

PHCET has been reading the signs of the times to visualize the direction it would like its graduates to take. Several projects, that require multidisciplinary input making students learn collaborative work across disciplines and specializations, are in progress. Several initiatives are taken for faculty development and accomplishment. It has been a great growth trajectory for PHCET in the last ten years most all in last five.

File Description	Document
Any additional information	<a href="#">View Document</a>

## Criterion 7 - Institutional Values and Best Practices

### 7.1 Institutional Values and Social Responsibilities

#### 7.1.1 Number of gender equity promotion programs organized by the institution during the last five years

**Response:** 7

7.1.1.1 Number of gender equity promotion programs organized by the institution year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
1	3	1	1	1

File Description	Document
Report of the event	<a href="#">View Document</a>
List of gender equity promotion programs organized by the institution	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

#### 7.1.2

##### 1. Institution shows gender sensitivity in providing facilities such as:

1. Safety and Security
2. Counselling
3. Common Room

**Response:**

##### 1. Safety and Security:

PHCET treats safety and security of its students, faculty and staff, most of all the girls, women faculty and staff a very serious responsibility and shoulders it ably and with no compromise. The Deputy CEO of the campus is a lady who is a Professor of Economics.

The College strives to foster gender equity in admission and employment with 20% students, 50% faculty, 30% non-teaching staff, 100% supporting staff being women. Anti-sexual harassment, Internal Complaints Committee Women's grievance redressal cell, and Anti-ragging Committee are empowered to deal with any dereliction. Workshop on self-defence (Suraksha), celebration of Women's day, etc. are organized to spread gender sensitivity.

While academically conscientious, PHCET is sensitive to gender equity, minorities and under-privileged

and reserved classes of students and staff and has systems and processes to meet challenges.

There is 24/7 security on the campus; both male and female security guard the premises. Provision of standby power supply ensures protection against power outages. Lifts in the college are automated to move to the nearest floor in order to avoid people getting trapped in the lifts during unexpected and sudden power outages.

Safe drinking water, pedestrian friendly internal roads, green landscaping, natural light in classrooms, industrial standard building structure, high ceiled classrooms with natural light and ventilation, fresh air, a very clean environment, etc. provide additional security and help avoid many health hazards. The transport system that the college provides on a subsidised rate for students and free for the faculty and staff provides considerable security with respect to travel related accidents and other difficulties that people encounter on a daily basis.

### **1. Counselling:**

Availability of a qualified counsellor and a counselling room makes it convenient for personal counselling. The privacy of the individual is sacrosanct and inviolable.

PHCET has a first aid room with resting facility and doctor on call. In case of any major case that cannot be handled in-house, the patient is immediately taken to a hospital close by. PHCET considers providing best possible medical help under the prevailing conditions is its bounden duty with no questions asked.

### **1. Common rooms:**

PHCET has provided for adequate number of wash rooms is available for girls on every floor and a common room with facility for resting.

People who are differently-abled and those who suffer from temporary setbacks due to accident, etc. are given the support needed. Divyangjan friendliness and compassion are part of the ethos of PHCET. Facilities such as lifts, interconnection of buildings at every floor, ramps and rails, rest rooms, scribes for examinations, supporting the special needs of students who are unwell and injured, facility for left handed writing during the examinations, etc. are provided. There are no compromises.

Commitment to its stakeholders in terms of practice of inclusion, professional ethics and code of conduct, cultivating gender sensitivity, providing safety and security, and other facilities for human needs indicate the respect for the dignity of the human person that PHCET upholds.

<b>File Description</b>	<b>Document</b>
Any additional information	<a href="#">View Document</a>

### **7.1.3 Alternate Energy initiatives such as:**

#### **1. Percentage of annual power requirement of the Institution met by the renewable energy sources**

**Response:** 1.71

7.1.3.1 Annual power requirement met by the renewable energy sources (in KWH)

Response: 11037.6

7.1.3.2 Total annual power requirement (in KWH)

Response: 645580.6

File Description	Document
Details of power requirement of the Institution met by renewable energy sources	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

**7.1.4 Percentage of annual lighting power requirements met through LED bulbs**

**Response:** 28.48

7.1.4.1 Annual lighting power requirement met through LED bulbs (in KWH)

Response: 25494

7.1.4.2 Annual lighting power requirement (in KWH)

Response: 89510.4

File Description	Document
Details of lighting power requirements met through LED bulbs	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

**7.1.5 Waste Management steps including:**

- **Solid waste management**
- **Liquid waste management**
- **E-waste management**

**Response:**

**Solid Waste Management**

The waste generated in PHCET mainly includes paper, plastics, glass, metals, foods, etc. The total solid waste generated in the campus is about 50 kg/day. Waste generated in the canteen (kitchen waste) is the major solid waste.

The canteen generates 40 Kg/day of biodegradable solid waste in the form of leftovers. In an effort to manage the biodegradable waste, bioremediation in the form of dry composting is initiated. First the refuse collected and placed in layer of 15cm height, then the good earth soil is spread over this to a layer of 5cm and the process is repeated to form alternate layers of refuse and good soil till the pit is filled to 15cm above the ground level. It is observed that after about 3- 4 months, the refuse is fully stabilized and changes into brown colour powdery mass called humus. Humus is passed through 12.5mm sieve to remove small stone, sand particles, etc. Then that passing material is used as manure in college campus for gardening.

To reduce the waste at institute, students are educated on proper waste management practices through lectures, site visits, PBL (Programme Based Learning), etc.

### Liquid Waste Management

Liquid waste generated by PHCET is classified under two types:

1. Sewage waste and cafeteria effluent waste
2. Laboratory waste

Sewage and Cafeteria effluent waste is collected in an underground sewer system and is connected with inlet pipe of septic tank on the campus. The outlet pipe of septic tank is connected with sub-main of Grampanchayat and then the wastewater is treated at the Sewage Treatment Plant, Rasayani. The Sewage Treatment Plant located 3.2 Km from PHCET has a capacity of 5 MLD. The treatment has various processes which removes all suspended particles and other impurities. After the above treatment the effluent is safely disposed.

Liquid chemical waste generated from the chemistry laboratory and environmental laboratory is diluted/neutralized in the laboratory sink by using tap water as they are non-toxic and non-hazardous in nature. The laboratory sink drain on the campus is connected with the Grampanchayat at sanitary sewer system and treated. The treatment is done as per the Pollution Control Board specifications.

### E-Waste Management

PHCET has several laboratories where electronic items are used and hence generate e-waste. It is collected and stored in a separate E-waste Collection Cell (EWCC), separated and segregated as per the characteristic properties of the items. Useful components from Computers, etc., are reused. PHCET is currently experimenting with utilization of e-waste in the preparation of concrete.

The E-waste generated is used as partial replacement of coarse aggregate (CA) in combination with fly ash. By replacing 0-15% of CA, concrete cubes were cast and various workability and strength test were conducted after 7 and 28 days of curing. The standard cube size of (150 x 150 x 150) mm were cast and tested for compressive strength and flexural strength.

File Description	Document
Any additional information	<a href="#">View Document</a>

### 7.1.6 Rain water harvesting structures and utilization in the campus

#### Response:

PHCET is situated in a region of heavy rainfall. However, during summer the whole region faces curtailment of water supply due to heavy industrial and commercial demand. Hence, conservation of water is a necessity. PHCET campus is planned for conserving and maintaining resources to fulfil the demand for water.

The college uses bore well and public supply to meet its general needs. The rain water from roofs is collected through the well-designed network of pipes. The network of pipes helps collect water in underground tanks and specially constructed recharge pits to recharge the tube wells and aquifers.

There are two types of underground tanks and recharge pits. There are two large capacity underground tanks, which collect water from roof tops and sewers that have dimensions 5M x 5M x 3M. The recharge tube well and aquifer pit has dimensions 1.5M x 1.5M x 2M, which collects water from surface runoff water and surrounded by sewers. The recharge pits are strategically placed in the vicinity to replenish ground water which helps to maintain the ground water level even during the summer.

The water collected in large underground tanks is used for several purposes, like gardening, fire fighting, sanitary and laboratory. The campus has drip and sprinkle procedure for gardening and for lawns. The water is very consciously used for plantation and sanitation. The fire fighting pipe lines are spread all over and cover all buildings. During scarcity of water the collected water in the underground tanks is also used for maintenance of the playground and to maintain the green cover within the campus.

The runoff water from higher surfaces, open fields and surrounding sewer is collected in the recharge pits to recharge tube wells. The recharge pit is filled with loose soil and gravel to percolate water in the ground. This percolated water will maintain the ground water level and also the aquifer level. The recharge of aquifer as done by using runoff water is promoted by government of Maharashtra's scheme "paaniadwa-paanijirwa" to make state drought free and for the enhancement of ground water table for irrigation purpose.

Rain water harvesting also reduces the water logging problem within the campus. This also improves the ground water table within the area because the water does not flow away but stands in that area and percolate in to the ground. Also excess water is stored into surrounded deep sewers helping to maintain the surrounding water table and greenery. Rain water harvesting also reduces the soil erosion problem within the campus.

Students are encouraged to make scientific studies to enhance rain water harvesting practices by carrying out final year projects. Regular, seminars and expert lectures are also arranged to give wider exposure to students.

File Description	Document
Any additional information	<a href="#">View Document</a>
Link for Additional Information	<a href="#">View Document</a>

### 7.1.7 Green Practices

- **Students, staff using**
  - a) **Bicycles**
  - b) **Public Transport**
  - c) **Pedestrian friendly roads**
- **Plastic-free campus**
- **Paperless office**
- **Green landscaping with trees and plants**

#### Response:

Green is the next gold. PHCET has an enviable location surrounded by hills and greenery. Some section of the third, fourth and fifth floors of the building is open to the sky and great facility to view the hills. A stream contours the longest side of the campus and is a breath-taking view from the upper floors of the building especially during the Monsoon. There are also several open viewing facilities at the tree top level at the interconnection of buildings. PHCET being located in an underdeveloped area makes the access to the campus cumbersome and hence the buses provided by the management help staff and students to reach the college fairly comfortably. It reduces the usage of a large number of private vehicles, usage of fuel and reduces carbon emission on a daily basis.

We are continuously in talks with Konkan Railway to provide train service to the nearest station. We hope this will happen soon. Once this is in place, we can stop all bus services of ours. This will avoid even the little pollution that is currently happening.

The limited use of stationery and plastic and reminders to switch off fans and lights when not required and conserving of water, etc., both contribute to good green practices and also inculcate the same in students.

Environmental sustainability in terms of waste management, rain water harvesting, students and staff using public transport, pedestrian friendly internal roads, green landscaping, natural lighting in classrooms, etc. are part of the architecture.

It has also added considerably to Divyangjan friendliness in terms of facilities such as lifts, interconnection of the buildings at every floor, ramps and rails, rest rooms supporting the special needs of students who are seriously unwell and injured, etc. are integral to the college.

Maintenance free exterior of the buildings with gypsum cubes considerably saves on painting of the exterior of the building up to twenty years. It gives both beauty and elegance and reduces the carbon foot print in terms of year to year maintenance and the consumption of paint and other hazards of painting a eleven storey building and the associated risks.

Manicured, verdant lawns of ample proportions and the well-planned and designed gardens covering more than 45,000 sq.ft., imaginative landscaping, over two hundred variety of beautiful and carefully selected

plants and shrubs and herbs that adorn the gardens and decades old big trees that surround the campus would make anyone want to study in PHCET.

Several acres of well cared green sports ground that cater for a large number of sports and games makes PHCET the dream of any student athletically inclined. While designing the campus and during construction every care has been taken to protect some of the decades old large trees that provide green cover and is the lung of any human settlement. The value and contribution of some of the trees on the campus is worth more than their weight in gold. Overall PHCET has appreciable green practices

File Description	Document
Any additional information	<a href="#">View Document</a>
Link for Additional Information	<a href="#">View Document</a>

### 7.1.8 Average percentage expenditure on green initiatives and waste management excluding salary component during the last five years

**Response:** 0.67

7.1.8.1 Total expenditure on green initiatives and waste management excluding salary component year-wise during the last five years(INR in Lakhs)

2017-18	2016-17	2015-16	2014-15	2013-14
16.85	0.98	0.13	12.79	0.78

File Description	Document
Details of expenditure on green initiatives and waste management during the last five years	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

### 7.1.9 Differently abled (Divyangjan) Friendliness Resources available in the institution:

1. Physical facilities
2. Provision for lift
3. Ramp / Rails
4. Braille Software/facilities
5. Rest Rooms
6. Scribes for examination
7. Special skill development for differently abled students
8. Any other similar facility (Specify)

**A. 7 and more of the above**

**B. At least 6 of the above**

**C. At least 4 of the above**

**D. At least 2 of the above**

**Response:** B. At least 6 of the above

File Description	Document
Resources available in the institution for Divyangjan	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

#### **7.1.10 Number of Specific initiatives to address locational advantages and disadvantages during the last five years**

**Response:** 49

7.1.10.1 Number of specific initiatives to address locational advantages and disadvantages year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
14	14	4	12	5

File Description	Document
Number of Specific initiatives to address locational advantages and disadvantages	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

#### **7.1.11 Number of initiatives taken to engage with and contribute to local community during the last five years (Not addressed elsewhere)**

**Response:** 159

7.1.11.1 Number of initiatives taken to engage with and contribute to local community year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
14	41	72	25	7

File Description	Document
Report of the event	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

**7.1.12**

**Code of conduct handbook exists for students, teachers, governing body, administration including Vice Chancellor / Director / Principal /Officials and support staff**

**Response:** Yes

File Description	Document
Any additional information	<a href="#">View Document</a>
URL to Handbook on code of conduct for students and teachers , manuals and brochures on human values and professional ethics	<a href="#">View Document</a>

**7.1.13 Display of core values in the institution and on its website**

**Response:** Yes

File Description	Document
Any additional information	<a href="#">View Document</a>
Provide URL of website that displays core values	<a href="#">View Document</a>

**7.1.14 The institution plans and organizes appropriate activities to increase consciousness about national identities and symbols; Fundamental Duties and Rights of Indian citizens and other constitutional obligations**

**Response:** Yes

File Description	Document
Details of activities organized to increase consciousness about national identities and symbols	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

**7.1.15 The institution offers a course on Human Values and professional ethics****Response:** Yes

File Description	Document
Any additional information	<a href="#">View Document</a>
Provide link to Courses on Human Values and professional ethics on Institutional website	<a href="#">View Document</a>

**7.1.16 The institution functioning is as per professional code of prescribed / suggested by statutory bodies / regulatory authorities for different professions****Response:** Yes

File Description	Document
Any additional information	<a href="#">View Document</a>
Provide URL of supporting documents to prove institution functions as per professional code	<a href="#">View Document</a>

**7.1.17 Number of activities conducted for promotion of universal values (Truth, Righteous conduct, Love, Non-Violence and peace); national values, human values, national integration, communal harmony and social cohesion as well as for observance of fundamental duties during the last five years****Response:** 67

7.1.17.1 Number of activities conducted for promotion of universal values (Truth, Righteous conduct, Love, Non-Violence and peace); national values, human values, national integration, communal harmony and social cohesion as well as for observance of fundamental duties year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
6	23	27	7	4

File Description	Document
List of activities conducted for promotion of universal values	<a href="#">View Document</a>
Any additional information	<a href="#">View Document</a>

**7.1.18 Institution organizes national festivals and birth / death anniversaries of the great Indian personalities**

**Response:**

PHCET strives to inculcate in its youth pride in the Indian culture, respect for its institutions and reverence for its heroes by observing important national days, celebrating national festivals and commemorating the birth and death anniversaries of its renowned sons and daughters. Independence day, Republic day, Constitution day, Martyrs day, Teachers day, Engineers day, etc. are very important days in PHCET.

Independence Day is celebrated with due solemnity and pride. The students, faculty and staff enthusiastically participate to hoist the national flag. The exhortation of the Chief Guest is followed by patriotic songs, street plays, etc. The programme ends with National anthem.

Republic Day is observed in all its solemnity and grandeur. Hoisting the National Flag on the grounds, address by the Chief Guest, and cultural performances give impetus to the occasion.

“Be the change you want to see in the world”, without a doubt reminds us of the Father of the nation. Gandhi Jayanti – October 2, the International Day of Nonviolence - and Martyrs day January 30 remind PHCET that we are free because of the sacrifices of others and that we stand *on the shoulders of giants*.

*As a mark of respect the 125th anniversary of Mahatma Gandhi’s experience of apartheid* - On 7 June 1893 in South Africa - along with the 100th Birth anniversary of Nelson Mandela, on July 18, 2018 was celebrated. Our Hon. Chairman, Dr. K.M. Vasudevan Pillai, inaugurated the venerable occasion. An elocution competition was held on the occasion of ‘Celebration of Two Apostles of Peace and Non-Violence.

*Martyrs’ Day is low-key.* Silence for 2 minutes at 11 AM on Jan 30 and pays homage to all martyrs of the nation remembering the very violent end of the apostle of peace and non-violence.

Ambedkar Jayanti: April 14, also known as ‘International Knowledge Day’ remembers the architect of Indian Constitution and also exposes the students to larger issues of democracy and other issues that would seriously impact their lives and work. “The ever greater food production, mineral extraction, forest clearance and fossil-fuel burning that bring short-term (and unequally distributed) lifestyle gains, the long-term consequences that are increasingly apparent in terms of soil erosion, water shortages, flooding, melting of Glaciers and climate disruption” etc., are very important issues that the graduates of PHCET are aware of and know the significance of days like Earth day and ‘Earth overshoot day’, etc.

Ekta Diwas was celebrated in a moving ceremony on October 30, 2018 by faculty and students of PHCET. **Constitution Day** (National Law Day), also known as Samvidhan Divas is observed, on 26 November every year to commemorate the adoption of **Constitution of India**.

Teacher’s Day Celebrations is an integral part of PHCET and the students enthusiastically celebrate it in diverse ways in each department.

The pride in one’s profession and the feeling that one belongs to a community of high pedigree of professionals makes Engineers’ day great for an engineer both professionally and personally. And one remembers a great Engineer, Sir Mokshagundam Vishweshwaraya KCIE, FASc.

File Description	Document
Any additional information	<a href="#">View Document</a>

### 7.1.19 The institution maintains complete transparency in its financial, academic, administrative and auxiliary functions

#### Response:

Conscientiously carrying out what one is expected to do the right way, at the right time in accordance with the tenets of one's profession and state of one in life summarizes the ethical conduct of a professional. PHCET as an academic institution makes efforts to inculcate these in all its stakeholders. Although an Engineering Institution, it is considerate and compassionate to the needy and deals with exceptions as exceptions and is not chained by precedent.

Code of conduct is articulated in the manuals for various stakeholders. The Vision, Mission, Goals, Commitment, and Core Values, the plan, purpose and objectives of various committees are all aimed at inculcating desirable values as well as to make responsible citizens of its students, faculty and the society that interacts with PHCET.

PHCET has a large number of young faculty members and therefore, the college makes very stringent efforts to lead them on the path of perfection and righteousness through mentorship and other means. The college encourages students and faculty to become members of Chapters of Professional bodies and hold invited talks by eminent persons to instil ethical and professional conduct. This also gives insight to students how to meet the expectations of their chosen profession.

The Vision, Mission, Program Educational Objectives (PEOs), Program Outcomes and Program Specific Outcomes (PSOs) of various disciplines clearly articulate, promote, and encourage students to be thorough professionals and reliable and responsible citizens who would be respected at work, at home, their community and the society to which they belong.

Celebrating Vigilance Week and taking Integrity Pledge in common with faculty and students and well as the Management of MES, where the Hon. Chairman also was present and participated in the pledge taking ceremony, though symbolic has huge impact on a thinking mind.

The college involves itself in various activities of social significance and events that highlight its unambiguous commitment to fairness, equity, and inclusion in all aspects of its business and professional conduct most of all in academics, administration, finance and other auxiliary functions.

The finance and accounts are audited by internal and statutory auditors on a regular basis. The internal auditor visits once in two weeks to observe the practices, guide and audit the accounting and financial functions. The audited accounts are required to be produced to various competent authorities including the ShikshanShulkSamiti (the Fee regulating authority) of Maharashtra State.

Fairness and transparency in examinations and other evaluations sacrosanct and never challenged.

The values of integrity, transparency in its dealings, maintenance of complete transparency in its

financial, academic, administrative and auxiliary functions, etc., are non-bargain-able and PHCET would leave no stone unturned to uphold these values.

File Description	Document
Any additional information	<a href="#">View Document</a>

## 7.2 Best Practices

### 7.2.1 Describe at least two institutional best practices (as per NAAC Format)

#### Response:

#### Best Practices I

##### 1. Title of the Practice: Study Workshop

##### 2. Objective of the Practice

Study Workshop was initiated to improve learning skills and academic proficiency of the students and help them achieve their goals. Many students find it difficult to voice their opinions and contribute to a class discussion. These workshops give them a platform where they can share their views and opinions. Workshops are organized in each department to enhance the exposure and understanding of the subjects. It also aims to introduce the students to strategies which will help them overcome their reluctance to participate actively in the class. They are also introduced to a variety of resources and staff available to guide them.

##### 3. The Context

The location of the PHCET necessitates extra support for the students to do well in academics as the students have several disadvantages such as long travel time, and most importantly language barrier. Most of the students come from vernacular medium up to their XII standard and some are first generation learners. Hence, the necessity to proactively innovative to support the students. Study workshop was found to be one of the remedies. Over the years it has become one of the best practices due to its demand, output and success in enabling students to do well.

The workshop presents strategies for taking notes during lectures and self-study. This results in clear, concise and meaningful notes which they can use for review and for practice. Additionally, the workshop teaches an easy-to-use reading technique that helps them read more effectively. Experience has shown that the students enjoy such activities.

##### 4. The Practice

The Study workshop is conducted in the classroom. Supporting documents and power point presentations are used to introduce and explain each theme, as well as a detailed bibliography and list of internet resources are made available to assist those who are interested in acquiring further information on the

subject.

A workshop is a period in which students can have discussion or practical work on a particular subject in a group and can share their knowledge or experience. In these workshops, teaching staff presents themes and concepts related to a course of study, or the development of a skill. It may involve more hands-on learning activities also. Discussion, interaction, presentation and debate on a given topic are common. Notes and other study materials are given to students. Students go throughout the notes given to them prior to the workshop and come up with the doubts. Those doubts of individual student are discussed with all students and appropriate solution for the same is provided to them by respective subject teacher. Black board teaching is also used.

The faculty members discuss some key points of a particular concept and write them on the board. Diagrammatic explanations of concepts are given. Pictorial views are more effective than the text. This fact is used while explaining them the concept. Small videos that help understand the concepts easily are shown. Paper - pen strategy is also used for some students.

Previous year question papers are referred by faculty as well as students. On the basis of chapter-wise weightage and previous year question papers, important topics are selected by faculty members and then students practice those concepts.

This helps them to write answers confidently in the final exam. This is also used for developing a practical approach to learning. So students practice computer programming in labs where they code and analyse the programmes. Lab manuals are also given to students. These lab manuals have detailed explanation of programs related to different subjects. Students refer these manuals while doing practice during workshops which helps them to acquire more knowledge of particular subject. Lab charts are available in each lab which gives diagrammatic representation of concept. These charts are helpful for faculty members while conducting practical oriented workshops.

### **1. Evidence of Success**

During the practice, the teacher take attendance and it is observed that nearly all students are present for the workshop. Workshops effectiveness is assessed by the eagerness of students to attend the sessions. The success of this method of support to students is reflected in their performance. It was perceived that practice done during these workshops improved their generic skills significantly as indicated by better problem solving, thinking out of box and improved analytical ability. When we compared these results with the previous result as well as subject result, it was noted that the graph improved. These workshops, which were taken during their academics, helped them in their final semester examination as well. It was observed that students were participating in the workshop out of sheer interest. It was also found that the assignments and tasks given to them kept them engaged with the studies and more practice. Students were more confident and focused for exams. They performed well in examinations because study workshops helped them to practice repeatedly the same topic. Since there was considerable practice it reflected in the performance in the end of semester examinations as well.

### **1. Problems Encountered and Resources Required**

It was a tedious as well as time consuming job for teachers to gather chapter-wise notes and questions. As the university pattern of examinations was also changing concurrently teachers had to work more.

Teachers had to first study and analyse the structure and paper pattern and then prepare for the respective subject. The overall task was time consuming since it involved various steps such as gathering of content topic-wise, collecting previous year question papers, preparing question banks, concept distribution according to marks, mapping those with subject outcomes etc. for preparing study material.

The course outcomes had to be taken into consideration for the preparation of the question bank and also follow the marking scheme. Along with the study material subject teachers also came up with their videos, power point presentations, etc., to help them deliver the topic effectively. Open and free software resources were also used.

### **1. Notes**

Student's feedback was positive and the reviews clearly indicated the workshops helped them for time management and for writing answers better. It improved their confidence and made them comfortable for exams. Students studied more in these workshops and they wanted these to happen more frequently.

Many students experience anxiety related to exams or tests which can result in marks that don't reflect their knowledge and ability. These workshops helped them to perform well in final exams with confidence. Students said that they would like some advice on how to improve their writing, planning, reading and research skills and how to give effective presentations, how to use tutor feedback in future assignments. They reported that it was a very good experience and asked for strategies and tips that would help in final exams. The workshops helped teachers to become mentors enabling the students to share their views, ideas, emotions and problems with teachers.

### **Best Practices II**

#### **1. Title of the Practice: Project Based Learning (PBL)**

#### **1. Objectives of the practice**

The objective of Project Based Learning (PBL) is to enable the students to apply the concepts and theories they have learnt in the previous semesters and in the on-going semester. Developing projects that incorporate the learning from various courses makes the students understand inter-connectedness of the courses. A project environment also fosters group work, cordiality and minimally even collective bargaining. PHCET has found PBL a subtle way of introducing in the young students desirable social behaviour that would help them in their professional lives. PBL has the potential to enhance employability and productivity and prepare them for the world of work.

#### **1. The Context**

The Engineering curriculum in most Indian Universities include a six months to twelve months of project work. The students may opt to carry out the project in the Industry, R&D institutions, etc. However, due to the poor preparation, many students are not able to take advantage of this opportunity. This affects placement and employability and becomes an institutional challenge. Hence, it was decided to introduce PBL in PHCET. This has been a great turning point and the enthusiasm of students is palpable. PBL was started as a pilot in the Computer engineering department and has now become an institution wide practice in each semester.

In the first half of 2017-18 PBL was restricted to second and third year students. 826 students of second year with 245 projects with fifty three guides and 799 third years worked on 241 projects with 48 guides. Each project had three or four students collaborating.

### **1. The Practice**

The need and rationale of Project Based Learning were very clear and hence it was fairly easy for all stakeholders to appreciate the importance and foresee the value addition it would have to the curriculum and also for the teaching learning processes.

The method adopted was practical and implementable. There were three ways projects could get initiated. A group of three or four students could identify a project that meets the specified objective and request the department to allocate a guide; faculty members suggest projects that they would guide and the students could opt for and the department has a pool of projects from which the students could choose and a guide would be allocated. The idea and efforts are to make these projects interdisciplinary gradually to give exposure to practical work environments and technical communication.

Fairness in assessment is a challenge in such situations. However, the method of regular interaction of the guide with the group, continuous monitoring of the progress of work enabled the guides to evaluate the contribution of each member of the team. The final presentation and the demonstration of the project in the presence of an external examiner give credibility to the whole exercise and make the students feel accountable.

An application oriented activity like PBL is multi-dimensional in the sense that it challenges the students to think in diverse ways and made to work innovatively; from literature survey to creating models and prototypes to testing and validation.

Team building, developing negotiating and compromising skills are offshoot of any engaging activity. The dearth of employable engineers can be overcome if the engineers in the making are equipped with problem solving skills and capabilities and are made to apply what they learn before they leave the academia. PHCET believes that PBL can help address a major lacuna in the Indian Higher Education and Engineering education in particular.

The scale of operation of PBL was containable as the scope of the projects was limited to manage in the available time. However, as the projects become more sophisticated and multi-disciplinary and become larger in scope it can become a challenge in terms of time, availability of faculty and even physical resources such as components for building models, etc. Despite the limitations, constraints and challenges discontinuing is not an option. The enthusiasm of the students is enough reward as a survey carried out in PHCET has indicated.

### **1. Evidence of success**

The experience of PHCET with PBL as a teaching learning process has been very positive. PBL engages the students. The survey conducted by PHCET of the students and the guides show that it is an effective and enjoyable way to learn - and develop deeper learning competencies required for success in college, career, and civic life. Activities like projects engage the hearts and minds, and provide relevance for

learning.

A project improves learning and by completing a project, students understand content better; remember what they learn and retain it longer than with traditional teaching. Hence, students who gain content knowledge along with PBL are better equipped to apply what they know in new situations.

The 21st century workplace needs people with knowledge and skills, dynamism, initiative and confidence to take responsibility, ability to solve problems, and work in teams, communicate ideas, critically analyse ideas and situations, and manage themselves effectively. PBL type of environment can inculcate many of these attributes in young students and the PBL in each semester gives adequate time for students to imbibe them.

### **1. Problems Encountered and Resources Required**

Prior learning experiences and theoretical understanding of the curriculum do not prepare students well for PBL. It requires a different kind of thinking and certainly has a learning curve. Many times students who are not very academically inclined or proficient seem to pick up PBL very fast and work productively and their attitude and approach to learning changes. Some students need more time to immerse themselves into PBL. Differences of opinion and personal conflicts, though naturally to be expected, the feedback of the guides indicate that the prevalence of these traits was nil or negligible. There was hardly any resistance or lack of enthusiasm among the students.

PBL affects other academic activities and therefore, the students and the guides have to work extended hours and even on holidays. However, it was well-received.

The required resources were available in the Component Library of the research Lab or the students procured them.

### **1. Notes**

A proof of concept for the effectiveness of PBL was established by running a pilot in the department of computer engineering. The enthusiasm and the participation of the students gave the impetus to include PBL as an institution wide practice.

Students organize themselves, share responsibilities, and negotiate among themselves. They come to the Institute on holidays also to work on their projects. Though not quantified yet, the observation of the guides are that the PBL has significantly impacted the behaviour of students and a degree of earnestness and enthusiasm has been instilled. With the entire Institute adopting PBL and having it as a semester wise activity twice a year will change the learning culture of PHCET and will improve the quality of the final year projects that the students undertake. PBL has the potential to significantly improve the employability and entrepreneurial efforts.

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### 7.3 Institutional Distinctiveness

#### 7.3.1 Describe/Explain the performance of the institution in one area distinctive to its vision, priority and thrust

##### Response:

'Building Quality consciousness' has been an area of upper most concern and thrust for PHCET from its inception. This concern has been consistently addressed during the course of the three phases of its perspective plans and strategic development. The quest for quality in all that it does, and inculcating quality consciousness in its students, faculty, staff and other stakeholders is a relentless mission. Several workshops, on 'Building Quality Consciousness', were conducted by the Principal and senior faculty for all students and faculty.

In a large institution for engineering education building quality consciousness is multipronged and strategic. It directly involves the students, the faculty, and administration and other stakeholders. The principal stakeholders - the students - are concerned with academics.

A robust teaching learning process is the first necessity to have quality academics and is the hallmark of wholesome education. Identifying gaps in curriculum and bridging them in different ways was the first step. PHCET has in its ten years of existence evolved nearly fifty student-centric methods to enhance the learning experience of students. Some of these methods like Project Based Learning (PBL) and Concept Inventory (CI) have become best practices and methods like Special Interest Groups (SIGs) and Meditation are still in the growth phase.

PHCET has a large number of students from the rural areas of Raigad District of Maharashtra and come from relatively poor academic background too. Some are first generation learners. Hence, need special attention. Counselling by professional a counsellor and by senior faculty and mentoring by the faculty are all part of the academic process to help students to become achievers. Quality is multidimensional.

The commitment of PHCET is unambiguous and it states that "**When students leave PHCET they should be confident and competent engineers determined to meet the challenges that may come in their professional and personal lives and take risks as appropriate, and have a 'WINNER'S ATTITUDE - no matter what background they come from when they enter PHCET.'**" *Though stated well it is a huge challenge too.*

PHCET has added a new dimension to the mentoring process by assessing the employability of each student during the mentoring sessions from the first semester till the time the student graduates. Employability is assessed on thirty quantifiable parameters. Each student assesses oneself. The mentor and other designated panel of senior faculty also assess the student. During the course of the studies in PHCET a student is assessed nearly ten times. *The effort is to create an employability index that indicates to the student and a potential employer the suitability of a student for employment.*

The progress of the student over the semesters can be quantified and used to help one to improve one's employability. This is also an indication of the quality of mentoring as well as the effort one put to achieve one's potential. The aim is to help the students to use new technology tools to create a digital portfolio of their learning journey, and to enable their need to connect, communicate and collaborate. Initiatives such as this help PHCET to empower its students from a wide stratum to consolidate their learning and graduate as

people who would be respected.

Quality in academics cannot be achieved without having quality faculty. Investing in the faculty to build on their strengths to face an ever changing world and contribute their share for shaping the new generation is imperative. New paradigms of teaching learning such as ‘concept inventory’ are incorporated for optimizing both faculty and student time.

‘Introduction and intrusion of disruptive technologies are shaking the society in a comprehensive way and academia is no exception. Available, affordable, and increased volume, transparency and distribution of information have enhanced democratization of information in a very effective way in a short span of time. Hence complex, collaborative and multidimensional communication across all stakeholders is necessitated’.

The students have access and possess the same information that the teacher has. Therefore, the role of the teacher is getting transformed from being an information provider to a mentor who guides how to evaluate the information that is available and how to use it for solving problems that the society faces. PHCET strives to equip the teacher to do it effectively.

The faculty improvement and empowerment are effected through programs such as faculty presentations, public speaking, membership of Special Interest Groups (SIGs), STTP, etc. The faculty presentations were organized in a novel way wherein each faculty made a technical presentation for ten minutes based on a course that one had taught in the previous semester. Two senior faculty members evaluated the presentation on five parameters viz., Content, Delivery, Communication, Engagement, and English language skills. Each parameter has maximum 10 marks. The average marks of two evaluators were given to each individual faculty both for individual parameters and the total average score. The Principal addressed groups of faculty depending on the score band. The evaluation report was also given to each faculty personally by the Principal. Faculty presentation and evaluation is a part of FDP and has a bearing on performance assessment.

SIGs are started for providing avenue for faculty and students to pursue niche areas of interests in their chosen domain of technology and science. There are 32 SIGs comprising all departments of PHCET. Each SIG has three or four faculty members who champion it. The students are inducted as members for carrying out various technical activities. Under the aegis of SIG several rare publications, manuscripts, and details of great patents are collected. A special publication of ‘SIG based knowledge series’ is in progress.

The faculty members are required to obtain a minimum score of 6.5 in the IELTS test for proficiency in English Language, and complete of at least one MOOCs course of their choice by early 2019. Opportunities are made available for faculty and students to develop and grow. Empowered students and emancipated employees are what PHCET dreams for.

The quest for quality in PHCET is without a pause true to its motto: **Vidya Karmasu Kaushalam** (Knowledge is Excellence at Work).

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## 5. CONCLUSION

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### Additional Information :

#### Infrastructure and Teaching Learning Environment

PHCET has excellent and enviable infrastructure that matches the best in class to support and inspire teaching learning processes. The facilities and the ambience should beckon, and inspire and induce creativity and learning.

#### Research and Development

A state-of-the-art research innovation and incubation centre with ultramodern facilities where students and faculty work on novel ideas. 'Automated Stamping Machine', 'Go-Karting vehicles', 'Bomb Diffuser Robot' and 'Finger Print scanning S/W', etc., are created.

#### Patents

Sixteen patents applications have been filed in last four years.

#### ISRO Outreach Centre

PHCET is a Network Institute with ISRO from June 2017, and 18 Remote Sensing and GIS programs were conducted. 3500 students from various branches of engineering are certified.

#### Community Commitment and CSR

'Service to community' is the raison d'être of PHCET and tries to be true to it. Organizing 'Community Service Day', 'Robogria' – a Robotics workshop for students from schools of neighbouring villages to instil STEM education, Traffic Mitra with Navi Mumbai Police, Mapathon to put vulnerable people on map, etc., are means of involvement.

#### Entrepreneurs of PHCET

PHCET has five entrepreneurs.

#### Student-Centric Methods

Nearly fifty student-centric methods have evolved to enhance the learning experience. Some have become best practices. Special Interest Groups (SIGs), Meditation etc., benefit students and faculty.

#### Building quality - Building people

'Quality consciousness' has been of upper most concern and thrust from its inception. The quest for quality and its realization is a relentless mission.

#### Knowledge Management

Every department has built its digital archive to preserve its knowledge and intellectual resources.

### **Mentoring and Employability Index**

Computing the employability of a student is added to mentoring. Employability is assessed *on thirty parameters with analysis by oneself, mentor, and a panel.*

### **Ownership of 'Brand PHCET' and Students Council**

Democratic way of functioning is learned by participation in school and college councils. Opportunities for participation for students to give shape to their academics are a must and thus enable them own 'Brand PHCET'.

### **Consultancy**

PHCET provides consultancy to clients like M/S JSW Steel, Welspun, Tata Consulting Engineers, etc. and have earned, Rs. 5621613 in the last four years.

### **Concluding Remarks :**

The data and information given in each of the seven criteria and the details available on the website bear testimony to the claims that PHCET has made of its modest accomplishments in the first decade of its service. Taking inspiration from the 'social entrepreneurship' approach of MES, PHCET too has been striving to inculcate it in its students to be socially productive and responsible citizens.

Two major departments accredited by NBA and applying for the NAAC accreditation are proof of the faith of PHCET in the quality of service it provides. Quality of service is determined by the quality of the human capital and the processes followed for the delivery of service. Hence PHCET applies for NAAC accreditation to validate its practices, processes and the quality of its people as it enters the second decade of its service and the Phase III of its development. PHCET rededicates itself with renewed vigour and confidence that it can outperform itself year to year in the next decade and realize the goal to become an institution of international importance practising its core values, and trusting its Motto:

**'Vidya Karmasu Kaushalam' (Knowledge is Excellence at Work)**