



SELF STUDY REPORT

FOR

1st CYCLE OF ACCREDITATION

**PUNJAB ENGINEERING COLLEGE (DEEMED TO BE
UNIVERSITY), CHANDIGARH**

**PUNJAB ENGINEERING COLLEGE (DEEMED TO BE UNIVERSITY) SECTOR 12
CHANDIGARH-160012**

160012

www.pec.ac.in

Submitted To

NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL

BANGALORE

(Draft)

1. EXECUTIVE SUMMARY

1.1 INTRODUCTION

The Punjab Engineering College (Deemed to be University) was originally established as Mugalpura Engineering College at Lahore (now in Pakistan) on November 9, 1921. The name of the institute was later changed to Maclagan Engineering College on March 19, 1924. In the year 1931, the institute got affiliated to Punjab University, Lahore. After partition in 1947, the institute was shifted to University of Roorkee (now IIT Roorkee) and was renamed as East Punjab Engineering College. In the year 1950, the word 'East' was dropped and it came to be known by its popular name –Punjab Engineering College (PEC).

Towards the end of December 1953, the institute shifted to its present campus in Chandigarh to function under Govt. of Punjab. In 1966, with the formation of Union Territory of Chandigarh, the institute came under the control of the UT Chandigarh Administration.

In October 2003, the Govt. of India notified PEC as a Deemed to be University, a Grant-in-Aid institution under UT Chandigarh Administration. In June 2009, the institute was rechristened as PEC University of Technology. With reference to recent UGC notification, the university has been renamed as Punjab Engineering College (Deemed to be University) on Nov 15, 2017.

PEC is one of the India's leading Institutions providing quality technical education in the field of engineering and technology, for more than 97 years now. The institute has also been listed in 12th plan of GoI to get converted into an institute of national importance similar to IITs and NITs.

At the time of becoming Deemed to be University, a Memorandum of Association (MOA), was drafted, which is followed in its true letter and spirit for the governance of the institute. The institute is governed by a Board of Governors (BOG), as defined in the MOA, with Sh. Rajinder Gupta, a renowned industrialist, as the present Chairman. The governance structure is similar to IITs, and therefore, the Head of the institution has been named as Director.

Vision

"To become a centre of excellence in technical education and research and to occupy a place amongst the most eminent institutions of the nation".

Mission

The institute has also set-up mission statements aligned with the vision of the institute with the ultimate goal of providing high quality value based technical education and carrying out cutting edge research. The mission statements are,

- To build across the institute a culture of excellence in teaching and learning with needed performance and accountability from all support activities.

- To enhance the institute standing as the institute of choice for students across the country; and to augment the presence of international students to at least ten percent of student body.
- To cultivate a field in which new ideas, research and scholarship flourish leading to emergence of creators, innovators, leaders, and entrepreneurs.
- To design the education through a continuous process so that the students qualifying from the institute have the top rating in placement.
- To achieve excellence in application-oriented research in selected areas of technology to contribute to the development of the region and the nation.
- To promote co- and extra-curricular activities for over-all personality development of the students.
- To develop responsible citizenship through awareness and acceptance of ethical values.
- To build a family of alumni and friends to create a network of allegiance and support for the institute.

1.2 Strength, Weakness, Opportunity and Challenges(SWOC)

Institutional Strength

1. Excellent quality UG students with admission through JoSAA portal based on Joint Entrance Examination (JEE).
2. Excellent PG students admitted through CCMT based on GATE score.
3. Excellent infrastructure of teaching learning process including smart class rooms and well equipped laboratories.
4. Externally Funded Research Projects from various research organizations such as DST, DRDO, DEITY, ADA, ARB, other line Ministries.
5. The Indian Railways has established a Chair (with an endowment of INR 10 Crores) in the thematic area of Geospatial Technology.
6. The institute is also acting as a spoke with a funding of INR 1.5 Crores to Design Innovation Center established by MHRD in Panjab University.
7. The Institute is participating in TEQIP (Phase III). Under TEQIP-III, PEC is mentor institute for Jawaharlal Nehru Government Engineering College (JNGEC), Sundernagar, Himachal Pradesh through twinning arrangement. A fund of 7.5 Crores has been allocated to PEC under TEQIP-III.
8. The institute is executing several projects of societal importance for Chandigarh Administration.
9. The institute is proud partner of Chandigarh Region Innovation and Knowledge Cluster (CRIKC) with PEC Director as the Vice President, and spearheading the promotion of higher education and research in Chandigarh tri-city.
10. A Doctoral Training Center (DTC) has been conceived under the TEQIP-III project and is under development. It will provide dedicated support for academic research in all disciplines of engineering, sciences and social sciences for postgraduates, early career researchers and postdoctoral fellows, to run pre-PhD courses and to improve engagement with external partners including industries.
11. The institute has signed MoUs with a number of industries who are supporting the institute in different ways.
12. The institute is north India's foremost industrial leadership development institution which is evident through the consistent Placement records of the students.

Institutional Weakness

- Campus Placements for Post Graduate students needs to be improved.
- Entrepreneurship & Incubation activities are in the initial stages.
- Interdisciplinary Research needs further encouragement.
- Patents/Technology Transfers are not happening in desired numbers.
- International Collaborations are few.
- Infrastructure needs to scale up for the enhanced student strength.
- Use of technology for managing the university needs to scale up to meet its growing challenges.

Institutional Opportunity

The growth in higher education, and particularly so in technical education provides significant opportunities to academic institutions in this space. Also, the rate at which the technology is being developed provides opportunities to PEC to play an important role in the economic growth of the nation. In particular, following are the opportunities that institute may consider for its growth:

1. Leveraging technology enhanced learning. The institute may consider for educational technologies, not limited to MOOCs, but also LMS, chatbots and other AI-based support for students, virtual labs. Through such technologies, the institute can support a much larger number of students, larger class sizes, with higher quality of learning at a lower cost to the student.
2. Given that the skills are getting obsolete at a much faster pace than ever before, the institute has an opportunity to train existing manpower in industry with newer knowledge and skillsets. Some of the technologies mentioned above will enable academic institutions to do this online so that the students can learn from where ever they are. In case, face-to-face teaching is important, the institute can have executive Master's programs with the provision of one year of residence instead of 2 years.
3. A greater number of industry are concerned about losing their competitive edge in the market and are investing in R&D. There is an opportunity for us to work jointly with industry to do research that solves their problems.
4. The world is becoming smaller and a large number of students desire a multi-cultural experience. The institute may attract foreign students and students from other parts of India to spend a semester or two at PEC. This will also provide multi-cultural experience to those of our students who stay on the campus. The institute has an opportunity to become a university for global students.
5. Problems today often requires an interdisciplinary or multi-disciplinary approach. This provides us with an opportunity to start newer academic programs creating manpower who can deal with such problems.

Institutional Challenge

PEC continues to face many challenges. These include:

1. The total budget for Punjab Engineering College is a fraction of that of IITs and is about half of that in NITs. Raising funds from alternate sources is a huge challenge. In the meanwhile, we need to find ways to not just manage our good quality teaching and research but also compete with better endowed CFTIs.

2. Faculty recruitment is always a challenge for academia. With fast expansion of technical education in the last decade or so, and in particular starting of a large number of new IITs, NITs, and IIITs, a potential faculty member has a lot more options. This also makes attracting faculty a challenge.

3. Infrastructure needs to be not just expanded for higher student intake, but even the existing infrastructure needs to be upgraded to support today's requirements of teaching and research. This becomes a challenge particularly keeping in view limited financial resources.

4. While the current land holding is sufficient for building infrastructure for current student strength and even a small increase, we will face challenge if we want to start many new programs and grow in numbers. There is already a discussion with the Government for additional land allocation.

5. When PEC became a deemed university, its governance structure changed, and instead of a government department, it became a society. As a result there are transition challenges with respect to service conditions, pension fund, etc.

6. Recruiting PhD students is also a challenge because of competition from other academic institutions and also because we do not get support for PhD fellowships and that has to be absorbed within our grant-in-aid.

1.3 CRITERIA WISE SUMMARY

Curricular Aspects

The Senate of the institute is the highest academic body, which has complete freedom to change the curriculum at short intervals. The Senate has two external members (typically one from academic institution of excellence such as IITs and the other from the industry). The Senate is guided by the Institute Academic Programme Committee and the Department/Center Academic Programme Committees. These committees have student representatives as members. Both, top-down and bottom-up approaches are prevalent in designing and development of the curricula. The committees take frequent inputs from the various stakeholders (i.e., industry, alumni and students) while proposing any changes in the curricula. The last UG curricula revision happened in 2014-15, with enormous flexibility given to the departments and students to form baskets of electives in different disciplines. The courses such as communication skills, technical communication, ethics and self awareness, engineering analysis and design, computer programming, full semester internship, industrial tours, as common core for all undergraduate programmes, and suitable baskets of electives of basic sciences, engineering sciences, humanities and management for all undergraduate programmes, are the hallmark of this curricula. The concept of minor and major specializations encourages learning through projects. The next cycle of revision of UG curriculum has been initiated. A new industry oriented PG curriculum, based on fractal credits, has been put in place from 2018-19 academic session. Salient features of the curriculum includes:

- Fractal credits system;- In fractal system, a semester is divided into six segment. Each segment is of 7 contact hours and 0.5 credits.
- Compulsory course on Machine Learning, Soft skill & Management (with fractal credits for communication skills, Management & Entrepreneurship and Professional Ethics) and Engineering Mathematics (with fractal credits for three elective courses from Engineering Mathematics basket)
- 20% courses per semester can be offered in blended mode with MOOCs/ industry.
- Mandatory Industrial visit during Summer Vacation.

The departments also have flexibility to change the content of the courses or add new courses in the baskets of electives, whenever the need arises. These changes are approved by the Senate or the Chairman of the Senate.

Teaching-learning and Evaluation

Students are being exposed to industrial projects by 6 months internships, MOOCs courses, Minor project in 5th Semester, Industrial Tours, Major Project in 7th and 8th Semester, Expert lectures and workshops by renowned industrialists, alumni and scientists throughout the semester, QEEE courses, Webinars, workshops by peers to their juniors through student technical societies and clubs, credited co-curricular activities, participation in various technical competitions both in India and abroad.

From 2017, the institute has started a few MOOCs courses on SWAYAM platform, a local faculty is assigned who also registers for the course, and these courses are taught in a blended mode. Facilities are also created where in faculty can generate their own digital content.

The evaluation of the students is a continuous process and is based on their performance in mid-semester examination, end semester examination, quizzes/short tests, tutorials, assignments, laboratory work (if any), make-up examinations (if applicable), etc. In general, there shall be no choice in test/examination papers.

The Instructor-in-charge, assisted by the team of tutors and other instructors, is responsible for making the question paper, conducting the examination in his/her course, getting the answer scripts evaluated by the team of tutors, and awarding the grades. The end term question paper for UG examinations are moderated by department committee under Chairmanship of Head of the department. The grades for all courses are moderated as per institute guidelines by duly constituted moderation committee. The grades are forwarded through the Head of the Department who will ensure that proper standards have been followed.

The complete transparency is maintained in evaluation system. The graded scripts of quizzes, tests, and mid-semester examinations are returned to the students within a reasonable time. The answer scripts of the final examinations are shown to the students after marking. All instructors will notify a time for such access within three days of the examination. The final grades earned by all students registered in a course are submitted by the Instructor-in-charge to the Academic Section through the Head of the Department within the prescribed time limit.

The institute is working hard in the direction of outcome base education (OBE).

Research, Innovations and Extension

Research Activities :

The Faculty of the institute has number of research areas and research labs in those areas. Some of the major research labs are:-

- Pulse Detonation
- Solar Technology Lab
- Information Retrieval Lab
- Mobile Sensing & IoT Lab

- Green Chemistry and Catalysis Lab
- Geological Remote Sensing Lab
- High Performance Concrete Lab
- Environment Engineering Lab
- Information Security Lab
- Power System Lab
- Microcontroller based System Lab
- Digital Design (VLSI) Lab
- Nano Materials Lab

Further as part of a consortium, our researchers have access to facilities at other educational institutions and research labs in the Chandigarh tri-city area.

PEC has a PhD program in all the departments and centers, and has a large number of PhD scholars, many of them funded through the Institute budget. Many faculty members have sponsored research projects from various funding agencies. We are also very active in consultancy. Research output in terms of scholarly papers is increasing every year.

Innovation Activities:-

The institute has taken several steps such as:

- Two incubatees have been rolled out in 2016.
- Khushwant Rai and Anjali Khurana of ECE & CSE Dept. (one of the incubatees) are Platinum winners of Infosys Aarohan Social Innovation Award for their innovation of affordable Braille printers.
- PEC has alliance with Hyden Green Institute Innovation & Entrepreneurship corridor (UK, China, India)
- PEC has registered Institution Innovation Council under AICTE/MHRD

Extension Activities:

The Institute conducts short term courses for industry as well as faculty members of other educational institutions. Some of them are supported through TEQIP program. We also organize many research seminars, workshops and other activities on campus. Our faculty members get invited to participate in similar events held by other institutions. In many instances, they are invited speakers, and they are on various committees like program committees of conferences.

At the student level, we have an active National Service Scheme (NSS) program through which our students carry out activities in villages and other nearby areas, including mentoring and teaching students from under-privileged backgrounds.

Infrastructure and Learning Resources

Major infrastructure for teaching learning process are as below:-

1. The institute has 50 classrooms out of which 12 smart classrooms have facility of learning management software, smart interactive board, computer with integrated podium and Internet and are air conditioned

and. Remaining classrooms have facility of projector, blackboard, whiteboard and Internet. The institute has more than 80 well equipped labs catering to various branches of engineering.

2. Library is spread over the area of 27000 sq. ft. and has three reading halls. It is fully computerized using integrated multi user library management system (Libsys software package). Library has implemented RFID enabled automation surveillance system for the library under TEQIP-II.
3. Computer Centre is the central place for campus wide networking with 10G Network Backbone and internet connectivity having 3000 nodes across the campus. The centre is equipped with web server, Academic server, E-mail server, Security firewall (UTM), Bandwidth management and data server. The campus is equipped with controller based wireless network with more than 200 wireless access point.
4. The institute workshop is equipped with Machine, Fitting, Electrical, Welding, Sheet Metal, Carpentry, Foundry, Smithy, Automobile, Electroplating and Pattern Shops. A MOA has been signed with SIEMENS to establish a Center of Excellence in the area of Manufacturing Engineering, Control and Automation. This will result in establishment of 14 state of art labs with a cost of Rs. 150 Crores where 90% will be contributed by SIEMENS.
5. The spacious grounds of the Institute are laid out into playfields for Cricket, Hockey, Football, Handball, Volleyball, Lawn Tennis, Badminton etc. The institute has a Gymnasium hall, a Swimming Pool and two Squash Courts.
6. PEC has adequate hostel facilities (06) for both boys and girls out of which four hostels are for boys and two hostels for girls. The hostels have backup power supply, wifi facility and good indoor and outdoor sports facilities.
7. All entrances of the institute and other areas where security is needed have been covered under CCTV network with a Central control room.
8. Placement Office(CDGC) has self learning and guidance resources for placement preparation with information kiosks and web portal and mobile app based communication.

Student Support and Progression

PEC students are surrounded by an extensive support system all the way from orientation through graduation.

1. The institute facilitates Orientation sessions for the students to acquaint them with the Vision and Mission of the University and the facilities available in the campus.
2. Institute Mentorship programme under student Tutor Scheme
3. Professional Counsellor is highly trained who listens to students and advice them about their problems.
4. Career development and guidance centre guides and facilitate career counselling to students in internship, placement and higher studies. Peer learning and Assistance Center has been conceived under TEQIP III programme.
5. Several schemes of student financial assistance are being implemented. Some of the existing schemes includes:-
 - Fee waiver for SC/ST/PwD/ Womens and EWS Students
 - Scholarships under various schemes from Centre Government.
 - Scholarships provided by our alumni
 - Travel grant for presentation of papers
6. Earn while you learn. If a student needs additional financial support beyond the scholarships mentioned above, we provide several types of on-campus jobs to such students.
7. Two year deferred placement policy who opt for entrepreneurship.

8. Seed money of one lakh for Incubator
9. Pre-placement training. There is a 3-day intensive training which prepares students for the placement season. They not only learn resume writing, group discussions, personal interviews, etc., but also get help from psychologists on how to control their stress and anxiety during the placement season. Further a refresher on important technical skills is provided.
10. Language lab. Currently the language lab provides support to improve English communication. But there is a plan to have facilities to learn other foreign languages as well.
11. Remedial classes. Students who have not performed well in the initial part of the semester are provided with remedial classes in the evening which run at a slower pace and also, have fewer students so that more of them can freely ask questions.

Governance, Leadership and Management

At the time of becoming Deemed to be University, a Memorandum of Association (MOA), was drafted, which is followed in its true letter and spirit for the governance of the institute. The institute is governed by a Board of Governors (BOG), as defined in the MOA, with Sh. Rajinder Gupta, a renowned industrialist, as the present Chairman. The board has nominees of the Chandigarh Administration, heads of a couple of institutions in Chandigarh region, representatives of industry, an alumnus, and representative of faculty. The governance structure is similar to IITs, and therefore, the Head of the institution has been named as Director. Board has two important standing committees - Building and Works Committee, and Finance Committee.

Most decisions are taken by the board, but some of the decisions are taken by Chandigarh Administration (like service conditions), which is as per our MoA.

Academically, the Senate is responsible for making all academic rules, including curriculum and graduation requirements. It works through various committees.

Director is the overall academic and administrative head of the Institute. There is one Deputy Director and Five deans to assist the Director. Each Dean is assisted by one or more Associate Dean. Each Department has a Head who is appointed by Director for a period of 3 years.

Institutional Values and Best Practices

Institutional Values:

1. We believe in flexibility - provide student choices where ever possible.
2. Transparency - students should know all policies before hand. All evaluation is shown to the students including all exam papers, quizzes, etc. Same is true for administration. Everything that we do can be shared under RTI. Most policies and processes are available on our website.
3. Fairness - for example, we study the question papers after the exam is conducted and also moderate grades to ensure fairness.
4. A culture of excellence
5. Treating students as adults and ensuring their participation in institute governance through membership of various committees as well as they managing their extra-curricular and hostel affairs on their own.

Best Practices:

1. Exam papers are moderated to ensure that they test course outcomes as well as they test at different levels of Bloom's taxonomy.
2. Full semester compulsory internship for UG students and optional one year industry project for PG in their second year of the programme
3. Having representation of all stake holders in Board of Governors including industry, academia, faculty, alumni, industry and government.
4. Financial, administrative and academic autonomy
5. Flexible industry oriented PG Academic curricula with provision of fractal credits
6. Flexible industry oriented UG Academic curricula
7. Complete transparency in examination grading system
8. Focus on Field Work and Industry Projects based learning
9. Enhanced engagement with industry and alumni
10. Research, development and enterprise culture
11. Excellent student support system
12. Student Young Research Fellowship Programme
13. Emphasis on co-curricular activities and soft skills of students
14. Recruitment of faculty mostly with PhDs from top places.
15. Active partner of Chandigarh Region Innovation and Knowledge Cluster
16. Strong alumni engagement

2. PROFILE

2.1 BASIC INFORMATION

Name and Address of the University	
Name	PUNJAB ENGINEERING COLLEGE (DEEMED TO BE UNIVERSITY), CHANDIGARH
Address	Punjab Engineering College (Deemed to be University) Sector 12 Chandigarh-160012
City	CHANDIGARH
State	Chandigarh
Pin	160012
Website	www.pec.ac.in

Contacts for Communication					
Designation	Name	Telephone with STD Code	Mobile	Fax	Email
Professor	Sanjeev Sofat	0172-2753851	9814741410	0172-2745175	headcse@pec.ac.in
Director	Manoj Kumar Arora	0172-2746074	9501013054	0172-2753051	webmaster@pec.ac.in

Nature of University	
Nature of University	Deemed University

Type of University	
Type of University	Unitary

Establishment Details	
Establishment Date of the University	09-11-1921
Status Prior to Establishment, If applicable	

Recognition Details		
Date of Recognition as a University by UGC or Any Other National Agency :		
Under Section	Date	View Document
2f of UGC		
12B of UGC		

University with Potential for Excellence	
Is the University Recognised as a University with Potential for Excellence (UPE) by the UGC?	No

Location, Area and Activity of Campus							
Campus Type	Address	Location*	Campus Area in Acres	Built up Area in sq.mts.	Programmes Offered	Date of Establishment	Date of Recognition by UGC/MHRD
Main campus	Punjab Engineering College (Deemed to be University) Sector 12 Chandigarh-160012	Urban	146	121988	Engineering		

2.2 ACADEMIC INFORMATION

Furnish the Details of Colleges of University

Type Of Colleges	Numbers
Constituent Colleges	0
Affiliated Colleges	0
Colleges Under 2(f)	0
Colleges Under 2(f) and 12B	0
NAAC Accredited Colleges	0
Colleges with Potential for Excellence(UGC)	0
Autonomous Colleges	0
Colleges with Postgraduate Departments	0
Colleges with Research Departments	0
University Recognized Research Institutes/Centers	0

Is the University Offering any Programmes Recognised by any Statutory Regulatory Authority (SRA)		: Yes
SRA program	Document	
AICTE	101811_1990_1_1532424064.pdf	

Details Of Teaching & Non-Teaching Staff Of University

Teaching Faculty												
	Professor				Associate Professor				Assistant Professor			
	Male	Female	Others	Total	Male	Female	Others	Total	Male	Female	Others	Total
Sanctioned	24				49				89			
Recruited	8	3	0	11	23	8	0	31	44	31	0	75
Yet to Recruit	13				18				14			
On Contract	0	0	0	0	0	0	0	0	17	9	0	26

Non-Teaching Staff				
	Male	Female	Others	Total
Sanctioned				233
Recruited	96	32	0	128
Yet to Recruit				105
On Contract	34	17	0	51

Technical Staff				
	Male	Female	Others	Total
Sanctioned				166
Recruited	78	11	0	89
Yet to Recruit				77
On Contract	33	4	0	37

Qualification Details of the Teaching Staff

Permanent Teachers										
Highest Qualification	Professor			Associate Professor			Assistant Professor			Total
	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.	8	3	0	21	8	0	25	21	0	86
M.Phil.	0	0	0	0	0	0	0	2	0	2
PG	0	0	0	2	0	0	18	8	0	28

Temporary Teachers										
Highest Qualification	Professor			Associate Professor			Assistant Professor			Total
	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	1	1	0	2
M.Phil.	0	0	0	0	0	0	0	0	0	0
PG	0	0	0	0	0	0	0	0	0	0

Part Time Teachers										
Highest Qualification	Professor			Associate Professor			Assistant Professor			Total
	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

Distinguished Academicians Appointed As

	Male	Female	Others	Total
Emeritus Professor	1	0	0	1
Adjunct Professor	19	1	0	20
Visiting Professor	9	10	0	19

Chairs Instituted by the University

Sl.No	Name of the Department	Name of the Chair	Name of the Sponsor Organisation/Agency
1	Civil Engineering	Kalpna Chawla Chair on Geospatial Technology for Indian Railways	Ministry of Railways Govt of India

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

Programme		From the State Where University is Located	From Other States of India	NRI Students	Foreign Students	Total
UG	Male	943	1005	0	91	2039
	Female	267	197	0	21	485
	Others	0	0	0	0	0
PG	Male	0	358	0	0	358
	Female	0	113	0	0	113
	Others	0	0	0	0	0
Doctoral (Ph.D)	Male	0	148	0	0	148
	Female	0	79	0	0	79
	Others	0	0	0	0	0

Does the University offer any Integrated Programmes?	No
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Details of UGC Human Resource Development Centre, If applicable

Year of Establishment	01-01-1970
Number of UGC Orientation Programmes	0
Number of UGC Refresher Course	0
Number of University's own Programmes	0
Total Number of Programmes Conducted (last five years)	0

2.3 EVALUATIVE REPORT OF THE DEPARTMENTS

Department Name	Upload Report
Aerospace Engineering	View Document
Applied Sciences	View Document
Centre Of Excellence In Industrial And Product Design	View Document
Centre Of Management And Humanities	View Document
Centre Of Total Quality Management	View Document
Civil Engineering	View Document
Computer Science And Engineering	View Document
Cyber Security Research Centre	View Document
Electrical Engineering	View Document
Electronics And Communication Engineering	View Document
Materials And Metallurgical Engineering	View Document
Mechanical Engineering	View Document
Production And Industrial Engineering	View Document

3. Extended Profile

3.1 Program

Number of programs offered year-wise for last five years

2017-18	2016-17	2015-16	2014-15	2013-14
33	32	33	32	37
File Description			Document	
Institutional Data in Prescribed Format			View Document	

Number of departments offering academic programmes

Response: 13

File Description	Document
Institutional Data in Prescribed Format	View Document

3.2 Students

Number of students year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
3043	2885	2615	2492	2530
File Description			Document	
Institutional Data in Prescribed Format			View Document	

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

2017-18	2016-17	2015-16	2014-15	2013-14
663	611	663	647	579
File Description			Document	
Institutional Data in Prescribed Format			View Document	

Number of students appeared in the examination conducted by the Institution, year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
5710	5258	4752	4566	4306
File Description		Document		
Institutional Data in Prescribed Format		View Document		

Number of revaluation applications year-wise during the last 5 years

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

3.3 Teachers**Number of courses in all programs year-wise during the last five years**

2017-18	2016-17	2015-16	2014-15	2013-14
1119	881	960	1135	1074
File Description		Document		
Institutional Data in Prescribed Format		View Document		

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

2017-18	2016-17	2015-16	2014-15	2013-14
154	153	136	141	143
File Description		Document		
Institutional Data in Prescribed Format		View Document		

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

2017-18	2016-17	2015-16	2014-15	2013-14
162	162	162	162	162
File Description		Document		
Institutional Data in Prescribed Format		View Document		

3.4 Institution

Number of eligible applications received for admissions to all the programs year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
10000	10000	10000	10000	10000
File Description		Document		
Institutional Data in Prescribed Format		View Document		

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
291	278	226	225	196
File Description		Document		
Institutional Data in Prescribed Format		View Document		

Total number of classrooms and seminar halls

Response: 76

Total number of computers in the campus for academic purpose

Response: 639

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

2017-18	2016-17	2015-16	2014-15	2013-14
3550.48	2881.73	2824.29	2514.93	2861.53

4. Quality Indicator Framework(QIF)

Criterion 1 - Curricular Aspects

1.1 Curriculum Design and Development

1.1.1 Curricula developed /adopted have relevance to the local/ national / regional/global developmental needs with learning objectives including program outcomes, program specific outcomes and course outcomes of all the program offered by the University

Response:

Keeping in view the academic objectives and the challenges, the following strategies have been adopted:

1. Technology Orientation: The curricula has been framed that a student is exposed to more of technology courses at the very beginning of the academic programme. The exposure to workshop practice has been increased. (Challenge 2)

2. Design Orientation: To ensure that students learn to design, the design training has not been confined to just a few capstone courses, but also starts from the very beginning, and in as many courses as possible. The students are required to undertake open-ended problems, the successful solutions of which should train students to look up data-books, to integrate knowledge learnt in different courses or at least in different parts of a course, to understand that most design problems require iterative methods, to appreciate that optimisation and sensitivity analyses are necessary tools of design, and to take holistic view of problems.

3. Remedial English Programme: The College administers a diagnostic test to assess the new student's ability to use the English language effectively. Those that are found to lack the minimum required proficiency are advised to join a remedial programme on at-cost basis. (Challenges 1,3; Objective 5)

4. Professional Orientation: Each academic programme has a standing committee consisting of industry professionals who reviews the programmes each semester and advises on the necessary modifications in programmes to help students acquire the professional orientation that prepares them for immediate employment in the relevant branch of engineering. (Objective 1)

75. Breadth and Depth Requirements: Each curriculum has been so designed that it covers the essentials of the major sub-divisions of a discipline. The students are required to select electives from within groups of courses classified according to the major sub-divisions of the discipline so that a depth area can be built. Electives must be arranged in streams of sub-disciplines. A student has to choose at least one stream of three courses. Other courses could be diverse (Objectives 3, 4)

6. Information Technology: In today's information-oriented global economy, university graduates must be savvy users of information technology. That is why our programmes use information technology as an effective tool to deliver content. (Objective 6)

7. Experimental Methods: Laboratory courses have been carefully designed so that a student learns that there is an experimental methodology, that it is field-independent, that it has been found reliable, and that it can be followed by students to make decisions at each stage from formulating the objectives to analysing the results. The purpose of the laboratory experiments is to teach experimental methods to obtain design information rather than to demonstrate physical phenomena. The students also learn the necessity of proper

error analysis. (Objective 7)

8. Humanities and Social Sciences: Our students need to develop in an all-round manner and must understand the human and the social contexts within which all professional activities take place. For this reason the programmes have about 15% content related to humanities and social sciences.

File Description	Document
Link for Additional Information	View Document

1.1.2 Percentage of programs where syllabus revision was carried out during the last five years

Response: 66.67

1.1.2.1 How many programs were revised out of total number of programs offered during the last five years

Response: 22

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

Response: 33

File Description	Document
Details of program syllabus revision in last 5 years	View Document

1.1.3 Average percentage of courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years

Response: 17.58

1.1.3.1 Number of courses having focus on employability/ entrepreneurship/ skill development year-wise during the last five years

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

File Description	Document
Average percentage of courses having focus on employability/ entrepreneurship	View Document

1.2 Academic Flexibility

1.2.1 Percentage of new Courses introduced out of the total number of courses across all Programs offered during last five years	
Response: 5.96	
1.2.1.1 How many new courses are introduced within the last five years	
Response: 73	
1.2.1.2 Number of courses offered by the institution across all programs during the last five years	
Response: 1224	
File Description	Document
Institutional data in prescribed format	View Document

1.2.2 Percentage of programs in which Choice Based Credit System (CBCS)/Elective course system has been implemented	
Response: 100	
1.2.2.1 Number of programs in which CBCS/ Elective course system implemented.	
Response: 33	
File Description	Document
Institutional data in prescribed format	View Document

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:
The institute integrates courses related with all aspects of Human Values and Professional Ethics along with Core Engineering Courses. Some of the courses included in this category are:
<ol style="list-style-type: none"> 1.Environmental Engineering 2.Ethics & Self Awareness 3.Communication Skills 4.Course Related to Village Development
The institute has well equipped human engineering lab in Centre of Excellence related to anthropometry, seat design, ergonomic evaluation of industrial system and consumer products. The research projects

executed in cyber security research centre also deals with ethical issues related to privacy and data protection. As a part of outreach activities several campaigns are run in the domain of cyber safety issues pertaining to women and children. A digital language lab has been established to provide opportunity to students to learn english and communication skills (both verbal and written) using new modes, methods of learning.

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

Response: 25

1.3.2.1 How many new value-added courses are added within the last 5 years

Response: 25

File Description	Document
List of value added courses	View Document

1.3.3 Average percentage of students enrolled in the courses under 1.3.2 above

Response: 73.92

1.3.3.1 Number of students enrolled in value-added courses imparting transferable and life skills offered year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
2396	2280	2324	1868	1214

1.3.4 Percentage of students undertaking field projects / internships

Response: 71.87

1.3.4.1 Number of students undertaking field projects or internships

Response: 2187

File Description	Document
List of programs and number of students undertaking field projects / internships	View Document

1.4 Feedback System

1.4.1 Structured feedback received from 1) Students, 2) Teachers, 3) Employers, 4) Alumni 5) Parents for design and review of syllabus Semester wise /year-wise

A. Any 4 of above

B. Any 3 of above

C. Any 2 of above

D. Any 1 of above

Response: B. Any 3 of above

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

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: 11.04

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
351	365	274	292	223

File Description

Document

List of students (other states and countries)

[View Document](#)

2.1.2 Demand Ratio(Average of last five years)

Response: 12.17

2.1.2.1 Number of seats available year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
962	955	793	793	678

File Description

Document

Demand Ratio (Average of Last five years)

[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: 84.28

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
242	240	187	197	160

File Description	Document
Average percentage of seats filled against seats reserved	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:

A student may be permitted by DAPC to take up an overload of one course to enrich his/her knowledge or clear backlogs as per the approved guidelines.

Academic Probation / Warning

The academic performance of each student shall be reviewed at the end of each regular semester. A student who fails to secure an SGPA of at least 4.5 and/or fails to earn a minimum of 14 credits during any semester will be considered to be on academic probation and a letter of warning shall be issued to him/her with a copy of the same being sent to the student's parents / guardian. This letter will also remind the student / parents / guardians of the conditions under which the programme of the student may be terminated.

Reduced Academic Load

A student placed on Academic Probation / Warning may be permitted a reduced load during the next semester if he/she so desires. However, the courses for which he/she registers will be decided by the appropriate DAPC keeping in mind the required minimum level of performance as per section 8.1 and the termination conditions laid down in section 8.4. The parents / guardians of such a student will be kept informed of his/her progress.

Minor/ Major Specialization

Students with good academic standing (having CGPA>7.5) and desirous of excelling further in their parent specialization itself/attaining a minor specialization will have to take 5 additional courses equivalent to 20 credits from the parent specialization/minor specialization area.

2.2.2 Student - Full time teacher ratio

Response: 19.76

2.2.3 Percentage of differently abled students (Divyangjan) on rolls

Response: 1.51

2.2.3.1 Number of differently abled students on rolls

Response: 46	
File Description	Document
Institutional data in prescribed format	View Document

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:

Student Centric Strategies to enhance learning:

- 1. Technology Orientation:** The curricula has been so framed that a student would be exposed to more of technology courses at the very beginning of the academic programme. The exposure to workshop practice and project based learning has been increased drastically
- 2. Professional Orientation:** Each academic programme has a standing committee consisting of industry professionals who reviews the programmes each semester and will advise on the necessary modifications in programmes to help students acquire the professional orientation that prepares them for *immediate* employment in the relevant branch of engineering.
- 3. Information Technology:** In today's information-oriented global economy, university graduates must be savvy users of information technology. That is why our programmes use information technology as an effective tool to deliver content. MOOCs based courses have been blended into the curriculum. Effective used of ICT in teaching pedagogy has been adopted.
- 4. Experimental Methods:** Laboratory courses have been carefully designed so that a student learns that there is an experimental methodology, that it is field-independent, that it has been found reliable, and that it can be followed by students to make decisions at each stage from formulating the objectives to analysing the results. The purpose of the laboratory experiments is *to teach* experimental methods to obtain design information *rather than to demonstrate* physical phenomena. The students also must learn the necessity of proper error analysis.
- 5. Humanities and Social Sciences:** Our students need to develop in an all-round manner and must understand the human and the social contexts within which all professional activities take place. For this reason the programmes should have about 15% content related to humanities and social sciences.

Credit Distribution is as follows:

- **Total Credits to earn for regular degree: 167-168 (for regular degree) and 187-188 (for degree with minor or major specialization).**

-Choice Based Credit System

-Flexibility in choice of electives

-Full semester industry-internship followed with major project

-Industry Visits

-Emphasis on project and design based learning

-Blended with MOOCs

-Emphasis on overall development

-Ten Points Scale Grading

- Concept of Minor & Major specialisation: **Add on 20 Credits**
- **Up to 6 credits to earn from Co-Curricula**

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

Response: 101.3

2.3.2.1 Number of teachers using ICT

Response: 156

File Description	Document
List of teachers (using ICT for teaching)	View Document

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

Response: 18.22

2.3.3.1 Number of mentors

Response: 167

2.4 Teacher Profile and Quality

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

Response: 89.75

File Description	Document
Year wise full time teachers and sanctioned posts for 5 years	View Document

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

Response: 52.61

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
91	79	74	71	68

File Description

Document

List of number of full time teachers with PhD and number of full time teachers for 5 years

[View Document](#)

2.4.3 Teaching experience per full time teacher in number of years

Response: 12.89

2.4.3.1 Total experience of full-time teachers

Response: 1985

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: 9.63

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
4	7	3	0	0

File Description

Document

Institutional data in prescribed format

[View Document](#)

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

Response: 79.51

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
138	136	120	124	126

File Description	Document
List of full time teachers from other state and state from which qualifying degree was obtained	View Document

2.5 Evaluation Process and Reforms

2.5.1 Average number of days from the date of last semester-end/ year- end examination till the declaration of results during the last five years

Response: 22.6

2.5.1.1 Number of days from the date of last semester-end/ year- end examination till the declaration of results year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
25	25	19	27	17

File Description	Document
List of programs and date of last semester and date of declaration of result	View Document

2.5.2 Average percentage of student complaints/grievances about evaluation against total number appeared in the examinations during the last five years

Response: 0

2.5.2.1 Number of complaints/grievances about evaluation year-wise during the last five years

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

2.5.3 Average percentage of applications for revaluation leading to change in marks during the last five years

Response: 0

2.5.3.1 Number of applications for revaluation leading to change in marks year-wise during the last five years

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

2.5.4 Positive impact of reforms on the examination procedures and processes including IT integration and continuous internal assessment on the examination management system**Response:****Reforms by introducing new Evaluation Methods and Teaching & Academic Management**

- Continuous evaluation Methods adopted: Based on regular quizzes, home-assignments, mid-term examinations, projects and final examinations.
- Grading based evaluation
- Evaluation by instructor(s) concerned.
- Examinations are total responsibility of the instructor(s).
- Final examination scripts to be shown to students to ensure transparency
- Scripts and records to be preserved for one term by the instructor.
- Grades to be submitted within 4 days of final examination.

Teaching & Academic Management

- Enhanced Student teacher interaction
- Security of academic records for tracing
- Counselling of under-achievers
- Challenges for over-achievers and hence minor and major specialisation introduced

Action against non-performers in form of Probation and termination from the programme

- Academic counselling and Career Counselling for studentts' needing help

The institute already has an indigenously developed application software through which the entire academic management and evaluations are done. The entire academic process has been automated through the same.

Besides, with changing requirements of automatic all the institute processes and need of integrating other student centric processes, E-Akadamik Software is being developed through CDAC Mohali and first phase has already been implemented and rolled out.

Adoption of Open Learning Pedagogy using MOOCs at PEC

PEC envisions to adopt Open Learning based teaching and Learning Pedagogy as a part of its academic processes. By adopting this philosophy, teachers are not just able to make their courses available online, but is also dedicated to ensuring that students participating in these courses have meaningful, engaging, constructive, and ultimately transformative learning experiences. MOOCs based courses have been rolled out in a phased manner to ensure smooth transition

The *OpenLearning philosophy*, which governs the design of the platform's student and teacher experience is based on the pedagogical foundations of:

1. **Student empowerment**, to foster deeper learning through intrinsic motivation,
2. **Authentic, active learning experiences** which go beyond publishing content,
3. **Community and connectedness**, to provide a social platform with the best support, encouragement, knowledge sharing, and engagement

The institute has adopted MOOCs based courses using the blended mode.

File Description	Document
Link for Additional Information	View Document

**2.5.5 Status of automation of Examination division along with approved Examination Manual
A. 100% automation of entire division & implementation of Examination Management System (EMS)**

B. Only student registration, Hall ticket issue & Result Processing

C. Only student registration and result processing

D. Only result processing

Response: A. 100% automation of entire division & implementation of Examination Management System (EMS)

File Description	Document
Current manual of examination automation system and Annual reports of examination including the present status of automation	View Document

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:

- Curriculum structure is formed by sub-committee of Senate normally after 4 to 5 year.
- Finalization of PO, PSO and CO are at department and Institute level through brainstorming sessions.
- Curriculum development for finalization of courses keeping in mind PO's, PSO's and CO's.
- Detailed syllabi including PO, PSO and CO are uploaded on website after necessar approval by IAPC and Senate

Mechanism of Communication

Soft copy of curriculum & course outcome of programs are also uploaded on the instiute website for reference of students and teachers.

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

Response:

Assessment of new Program Outcome through Restructuring of Program Curriculum

Courses in UG Curriculum have been completely revised with an aim to make UG education more industry relevant in an attempt to make them industry ready and hence open up better career opportunities. The balance of meeting the needs to go for higher research vs industry placement has been well taken care of. Based on the feedback of experts (from industry, alumni, students, faculty from IITs and NITs), the entire curriculum has been restructured; A lot of changes were made this semester, and these changes are cumulative with changes made in previous semesters centrally (such previous changes include fixing the grading system, introducing minor and major specialisations, courses on professional ethics and self awareness, introducing more labs and obtaining direct student feedback).

Evaluation Methods for assessing Course Outcomes/direct assessment methods

- Continuous evaluation Methods adopted: Based on regular quizzes, home-assignments, mid-term examinations, projects and final examinations.
- Grading based evaluation

- Evaluation by instructor(s) concerned.
- Examinations are total responsibility of the instructor(s).
- Final examination scripts to be shown to students to ensure transparency
- Scripts and records to be preserved for one term by the instructor.
- Grades to be submitted within 4 days of final examination.

Graduate Programme Outcomes are also assessed by taking feedback through multiple stakeholders, In particular, indirect feedback from following stake holders are sought on regular basis:

- 1.Students about the course outcome as well as Instructors
- 2.Industries visiting form placements
- 3.Alumni

2.6.3 Average pass percentage of Students

Response: 94.11

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

Response: 703

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

Response: 747

File Description	Document
List of programs and number of students passed and appeared in the final year examination	View Document

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 Promotion of Research and Facilities

3.1.1 The institution has a well defined policy for promotion of research and the same is uploaded on the institutional website

Response: Yes

File Description	Document
Minutes of the Governing Council/ Syndicate/Board of Management related to research promotion policy adoption	View Document
URL of Policy document on promotion of research uploaded on website	View Document

3.1.2 The institution provides seed money to its teachers for research (average per year)

Response: 21.1

3.1.2.1 The amount of seed money provided by institution to its faculty year-wise during the last five years(INR in Lakhs)

2017-18	2016-17	2015-16	2014-15	2013-14
0	0	3.42	0	102.08

File Description	Document
List of teachers receiving grant and details of grant received	View Document

3.1.3 Number of teachers awarded international fellowship for advanced studies/ research during the last five years

Response: 1

3.1.3.1 The number of teachers awarded international fellowship for advanced studies / research year-wise during the last five years

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

File Description	Document
List of teachers and their international fellowship details	View Document

3.1.4 Number of JRFs, SRFs, Post Doctoral Fellows, Research Associates, other research fellows in the university enrolled during the last five years

Response: 18

3.1.4.1 The Number of JRFs, SRFs, Post Doctoral Fellows, Research Associates and other research fellows in the university enrolled year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
4	6	5	3	0

File Description	Document
List of research fellows and their fellowship details	View Document

3.1.5 University has the following facilities

1. Central Instrumentation Centre
2. Animal House/Green House / Museum
3. Central Fabrication facility
4. Media laboratory/Business Lab/Studios
5. Research/Statistical Databases

Any four facilities exist

Three of the facilities exist

Two of the facilities exist

One of the facilities exist

Response: Two of the facilities exist

File Description	Document
List of facilities provided by the university and their year of establishment	View Document

3.1.6 Percentage of departments with UGC-SAP, CAS, DST-FIST, DBT, ICSSR and other similar recognition by government agency**Response:** 7.69

3.1.6.1 The Number of departments with UGC-SAP, CAS, DST-FIST ,DBT,ICSSR and other similar recognition by government agency

Response: 1

File Description	Document
List of departments and award details	View Document

3.2 Resource Mobilization for Research**3.2.1 Grants for research projects sponsored by the non-government sources such as industry, corporate houses, international bodies, endowments, Chairs in the institution during the last five years (INR in Lakhs)****Response:** 97.26

3.2.1.1 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
96.66	0	0.60	0	0

File Description	Document
List of project and grant details	View Document

3.2.2 Grants for research projects sponsored by the government sources during the last five years**Response:** 1194.16

3.2.2.1 Total Grants for research projects sponsored by the government sources year-wise during the last five years(INR in Lakhs)

2017-18	2016-17	2015-16	2014-15	2013-14
409.63	471.91	215.87	13.23	83.52

3.2.3 Number of research projects per teacher funded, by government and non-government agencies, during the last five year**Response:** 0.96

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

Response: 38

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

Response: 198

3.3 Innovation Ecosystem**3.3.1 Institution has created an eco system for innovations including Incubation centre and other initiatives for creation and transfer of knowledge****Response:**

Entrepreneurship forms the backbone of the nation's economy and in order to strengthen entrepreneurship ecosystem, educational institutions must work on igniting the ideology of starting own ventures amongst India's youth. The youth of today needs to be more inclined towards creating jobs rather than getting one. Therefore, to assist the youth to become self-employed and create employment opportunities, Punjab Engineering College (Deemed to be University) as an academic institution has come forward to provide support in every possible manner. For this purpose, a full-fledged **Entrepreneurship and Incubation Cell (EIC)** at PEC was setup up in 2015 and the incubation facilities were created in 2016 which work as a catalyst for entrepreneurship development in the institute.

EIC's mission is to build successful businesses by providing business incubation facilities to new start-ups. The Incubator nurtures and promotes budding entrepreneurs by supplying a range of services with main focus towards entrepreneurship in form of Entrepreneurial Development Programmes and Opportunities such as Networking with Legal Advisors, Venture Capitalists, Angel Investors, Financial Institutions, Marketing Agencies, Technical Experts, and Corporate Professionals.

Since its inception, EIC has been engaging the students with Business-Plan Competition, Panel Discussions and Workshops delivered by notable experts in their respective fields.

However, the most fruitful results in terms of nurturing the culture of innovations and a mindset of change are reaped from EIC internal motivation and discussion sessions where senior members of EIC share their experiences and tell the students about their 4 year long journey in the cell. In our experience, "Students are able to relate more to someone who has been in similar shoes in the past".

EIC, annually conducts the IGNITE- Business Idea Challenge Competition for inviting business plans and proposals from students which are screened by the panel of internal and external experts. This Competition engages students with handsome cash prizes and further motivates them for out-of-box innovations and solutions.

EIC, also provides seed money to incubatees to the tune of Rs. 1 Lakh along with state of the art incubation facilities and mentorship throughout their stay in the PEC incubator. A ten member implementation committee has been constituted to provide continuous assistance to the students. Two year deferred placement policy has also been incorporated to motivate the students to convert their ideas into ventures.

In order to boost entrepreneurial spirits among students EIC organized a 2-day long Summit which was an amalgamation of Guest Lectures and a workshop conducted by professional entrepreneurship trainers from EDII, Ahmedabad. This event saw participation from 100+ students.

Institution Innovation council is registered under MHRD.

EIC also works to keep their students abreast with latest technologies and innovations in the market and hence, have conducted workshops to expose students to the fields like Blockchain and Cryptocurrency.

Apart from this, EIC hosts a plethora of events as a part of annual cultural-technical fest - PECFEST. These events are focused on 'Learning by Fun'. Using some simple games, it is aimed at helping participants to understand basic entrepreneurial and trading skills.

3.3.2 Number of workshops/seminars conducted on Intellectual Property Rights (IPR) and Industry - Academia Innovative practices during the last five years

Response: 0

3.3.2.1 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
0	0	0	0	0

File Description

Document

List of workshops/seminars during the last 5 years

[View Document](#)

3.3.3 Number of awards for innovation won by institution/ teachers/ research scholars/students during the last five years

Response: 3

3.3.3.1 Total number of awards for innovation won by institution/teachers/research scholars/students year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
2	0	0	0	1

File Description	Document
List of innovation and award details	View Document

3.3.4 Number of start-ups incubated on campus during the last five years

Response: 2

3.3.4.1 Total number of start-ups incubated on campus year-wise during the last five years

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

File Description	Document
List of startups details like name of startup, nature, year of commencement etc	View Document

3.4 Research Publications and Awards

3.4.1 The institution has a stated Code of Ethics to check malpractices and plagiarism in Research

Response: Yes

3.4.2 The institution provides incentives to teachers who receive state, national and international recognition/awards

Response: No

3.4.3 Number of Patents published/awarded during the last five years

Response: 12

3.4.3.1 Total number of Patents published/awarded year-wise during the last five years

2017-18	2016-17	2015-16	2014-15	2013-14
9	2	0	1	0

File Description	Document
List of patents and year it was awarded	View Document

3.4.4 Number of Ph.D.s awarded per teacher during the last five years

Response: 0.8

3.4.4.1 How many Ph.Ds are awarded within last 5 years

Response: 73

3.4.4.2 Number of teachers recognized as guides during the last five years

Response: 91

File Description	Document
List of PhD scholars and their details like name of the guide , title of thesis, year of award etc	View Document

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

Response: 13.71

3.4.5.1 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
486	306	487	423	291

File Description	Document
List of research papers by title, author, department, name and year of publication	View Document

3.4.6 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: 0.19

3.4.6.1 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
12	11	2	2	1

File Description	Document
List books and chapters in edited volumes / books published	View Document

3.4.7 Bibliometrics of the publications during the last five years based on average citation index in Scopus/ Web of Science or PubMed/ Indian Citation Index

Response:

3.4.8 Bibliometrics of the publications during the last five years based on Scopus/ Web of Science - h-index of the Institution

Response:

3.5 Consultancy

3.5.1 Institution has a policy on consultancy including revenue sharing between the institution and the individual

Response: Yes

File Description	Document
URL of the consultancy policy document	View Document

3.5.2 Revenue generated from consultancy during the last five years

Response: 802.71

3.5.2.1 Total amount generated from consultancy year-wise during the last five years (INR in Lakhs)

2017-18	2016-17	2015-16	2014-15	2013-14
196.68	190.38	184.6397	127.56	103.45

File Description	Document
List of consultants and revenue generated by them	View Document

3.5.3 Revenue generated from corporate training by the institution during the last five years**Response:** 1.14

3.5.3.1 Total amount generated from corporate training by the institution year-wise during the last five years (INR in Lakhs)

2017-18	2016-17	2015-16	2014-15	2013-14
1.14	0	0	0	0

File Description	Document
List of teacher consultants and revenue generated by them	View Document

3.6 Extension Activities**3.6.1 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:**

The National Service Scheme (NSS) is a Government of India public service program conducted by the Department of Youth Affairs and Sports, Government of India. In PEC, the programme aims to inculcate social values in students and to provide service to society without bias. NSS volunteers work to ensure that needy get help to enhance their standard of living and lead a life of dignity. A number of projects were undertaken during last five years for sensitizing students towards social issues and some of them are enlisted below:

1. AABHA

In this noble project, the students of PEC teach the children of the helping staff of the college, mainly mess workers, security guards, cleaning staff etc. It is a semester long project and an integral part of NSS, PEC since its inception. The project covers the students of all classes and children are taught five days a week. Their teaching involves Content Teaching, Interactive sessions, Test series and Quizzes. This project has time and again proved to be the most successful venture of NSS.

1. BLOOD DONATION CAMP

Biannual Blood Donation Camp is organized by the NSS PEC in coordination with the Department of Transfusion, PGIMER (Post Graduate Institute of Medical Education and Research) biannually. A total of more than 700 units of blood are collected every year.

1. STREET PLAY

Street play or Nukkad Natak is a form of theatrical performance in outdoor public spaces which aims at spreading awareness about various social and cultural issues prevailing in the society. NSS, PEC has been organizing such plays for many years and the plays have gained so much appreciation and encouragement from all sections of society.

1. TREE PLANTATION DRIVE

The NSS wing of PEC in collaboration with State Bank of India, PEC branch organizes a tree plantation drive in the college premises every year with an aim to have a greener and cleaner environment. The student volunteers and planted around 200 saplings, including neem, rubber and belpatra amongst other herbal plants.

1. ACHAAR AND WORKSHOP LAB COAT DISTRIBUTION

In this project, women of Self Help Groups are provided raw materials for preparation of achaar and workshop lab coats. The achaar is then sold by the NSS volunteers at a price relatively cheaper than the market price. The lab coats are sold to students of first year for workshops at economical prices.

1. ORGAN DONATION AND EYE DONATION CAMPS

Organ Donation and Eye donation camps are regularly organized every year in collaboration with PGIMER Chandigarh to create awareness among the students for the cause.

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

Response: 0

3.6.2.1 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
0	0	0	0	0

File Description

Document

Number of awards for extension activities in last 5 years

[View Document](#)

3.6.3 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: 45

3.6.3.1 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
12	12	8	8	5

File Description**Document**

Number of extension and outreach programs conducted with industry,community etc for the last five years

[View Document](#)

3.6.4 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: 0.06

3.6.4.1 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
2	1	2	2	1

File Description**Document**

Average percentage of students participating in extension activities with Govt. or NGO etc.

[View Document](#)

3.7 Collaboration

3.7.1 Number of Collaborative activities for research, faculty exchange, student exchange per year

Response: 0.4

3.7.1.1 Total number of Collaborative activities for research, faculty exchange, student exchange year-wise during the last five years

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

File Description	Document
Number of Collaborative activities for research, faculty etc	View Document

3.7.2 Number of linkages with institutions/industries for internship, on-the-job training, project work, sharing of research facilities etc. during the last five years

Response: 631

3.7.2.1 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
177	167	152	135	0

File Description	Document
Details of linkages with institutions/industries for internship	View Document

3.7.3 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: 27

3.7.3.1 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
7	11	7	2	0

File Description	Document
Details of functional MoUs with institutions of national, international importance, other universities etc during the last five years	View Document

NAAC

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:

Key Academic Infrastructure

- Lecture Halls/ Classrooms: 53 (Smart Class rooms)
- Tutorial Rooms : 08
- Drawing Halls : 06
- Labs : 80 (with State of the Art Equipment)
- Committee/Seminar Rooms: 15+
- ***Central Library***
- ***Computer Center***
- High Speed Internet
- •Campus & Hostels are Wi-fi
- •Data Center and Cloud Computing Facility
- •Library of licensed softwares
- ***Career Development and Guidance Center***
- ***Entrepreneurship Cell & Incubator***

Central Workshops for hands on are:

- Carpentry Shop
- Electric Shop
- Sheet Metal Shop
- Automobile Shop
- Foundry Shop
- Welding Shop
- Electroplating Shop
- Forging Shop
- Fitting Shop
- Machine Shop

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

Response:

The institution has adequate facilities for sports, games (indoor, outdoor), gymnasium, yoga centre etc.

Indoor:

- Badminton - 2 Badminton Courts
- Squash – 2 Courts (Wooden Floor)
- Yoga Centre
- **Gymnasium Hall:-** Fitness Centre has the sports equipment; Multi Gym 16 Stations, Seated Alternate Leg Press Machine, Twin Arm Pulley, Seated Rowing, Cross Over Pulley, Angular Peck Dec, Vibrator Machine Belt Motorized, Exer Row Hydraulic, Chest Press, Step Climber Hydraulic Stepper Machine, leg Curl & Leg Extension, Multi (Total) Hip Machine, Hack Squat/Leg Isolator Machine Pulley Weights, Seated Back Pulley Machine, Vertical Leg Press, Short Arm Curling, Stepper, Jogger, Bench Press Bench with Stand, Grip Dynamometer, Skin Fold Calliper, Stadiometer, Weight Lifting Platform, Power Weight Lifting Set, Stepper with meter, Rowing Machine, Weighing Machine, Basic Power Centre, Running Track Treadmill, Elliptical Cross Trainer, Upright Bike, Recumbent Bike, Dumbles, Inclined Bench etc.

Outdoor:

- Athletics – Athletic Track 400 M (Clay)
- Cricket – Matting Pitch and 3 Net Practice
- Football – 2 Fields (Grassy)
- Basketball– 1 Court (Cemented)
- Hockey – 1 Field (Grassy)
- Kabaddi – 1 Court (Clay)
- Lawn Tennis – 2 Courts
- Swimming Pool – 1
- Table Tennis – 5 Tables
- Volleyball – 2 Courts (Clay)

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

Response: 15.79

4.1.3.1 Number of classrooms and seminar halls with ICT facilities

Response: 12

File Description	Document
Number of classrooms and seminar halls with ICT enabled facilities	View Document

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

Response: 23.72

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
680	592	452	562.16	1160.95

4.2 Library as a Learning Resource

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

Response:

LIBRARY AUTOMATION

Today library automation is the need of the hour as information helps learners to retain themselves in this ever changing world and automation eases the retrieval of information and saves the time. There is increased acceptance of the utility of computer and ICT tools for better organization of information resources and effective rendering of services in the libraries.

PEC library has continuously changed itself from a traditional to a modern one with the introduction of different technologies available for library. The library uses commercial **Library Management Software (LibSys)**, which supports all in-house operations (basic as well as advanced) and services of the Library. All in-house activities in the Library including Acquisition, Cataloguing, Circulation and Serials Control are fully computerized since July 2008. Retrospective conversion of bibliographic records has been completed and Online Public Access Catalogue (OPAC) of the Library is operational and accessible on the intranet.

In 2014, Library implemented **RFID** enabled **Automation and Surveillance** Project under **TEQIP-II**. Every document in the Library is being tagged with **RFID tags** and users are being issued **Smart campus cards**. One self-service station is installed to facilitate users with self-issue/return of documents. Two security gates, i.e. theft detection pedestals, have been installed at the entry gates of the library to check the movement of unissued books outside the library.

Library has its own webpage within the website of Punjab Engineering College (Deemed to be University). It provides introduction to library, links to OPAC as well as to Digital resources subscribed by the library. The link of library webpage is <http://pec.ac.in/library>

CCTV network has also been established in the library in the year 2017. A total of 29 cameras got installed at the sensitive areas where security is needed.

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

Response:

Collection

The library works hand in hand with academic departments in making selections for the print as well as electronic resources. Usually the recommendations to purchase resources are taken from the HOD's of various departments. All the HOD's, after consulting their faculty members, send their requisition to the library. While acquiring titles supply of the latest editions is ensured.

For smooth functioning of the library and formation of policies, rules & regulations and implementing the library policies in a judicious manner, an infrastructure is needed for the library. To meet all the above objectives, the Library has an advisory committee to advice on policy matters related to library.

Periodical section acquires/manages journals/periodicals (both in print & electronic form) to provide researchers with resources that are useful to enhance their research projects. The collection of reference section includes dictionaries, thesaurus, encyclopaedia, geographical sources, yearbooks, and atlas etc. This section also provides short range and long range reference services to the readers.

As Library is subscribing to a number of online databases for the benefit of its students and faculty, sometimes precious time of the users' is spent in clicking the mouse umpteen times in accessing full text of e-resources from different platforms. This time could be saved if all the e-resources from diverse platforms are made available in the form of one-stop-search facility to satisfy information needs of the users. One such platform is **EBSCO Discovery Service** and access for the same has been activated through TEQIP-II in March 2017.

Plagiarism has emerged as one of the most troublesome issues bothering academia. PEC is struggling continuously to curb this menace. As a remedial measure, library has provided access to **anti-plagiarism software Turnitin** in the year 2014, with the 100 user licenses, which has been raised to 250 in the year 2018. Library acts as a nodal agency to check the similarity index of the PhD thesis.

Grammarly is an app that automatically detects potential grammar, spelling, punctuation, word choice, and style mistakes in writing. Grammarly's algorithms flag potential issues in the text and suggest context-specific corrections for grammar, spelling, wordiness, style, and punctuation to improve the writing.

4.2.3 Does the institution have the following

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

Any 4 of the above

Any 3 of the above

Any 2 of the above

Any 1 of the above**Response:** Any 4 of the above

File Description	Document
Details of subscriptions like e-journals,e-ShodhSindhu,Shodhganga Membership etc	View Document

4.2.4 Average annual expenditure for purchase of books and journals during the last five years (INR in Lakhs)**Response:** 147.24

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
245.92	66.71	112.31	198.17	113.11

File Description	Document
Details of annual expenditure for purchase of books and journals during the last five years	View Document

4.2.5 Availability of remote access to e-resources of the library**Response:** Yes**4.2.6 Percentage per day usage of library by teachers and students****Response:** 14.17

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

Response: 453

4.2.7 E-content is developed by teachers :

- 1.For e-PG-Pathshala
- 2.For CEC (Under Graduate)
- 3.For SWAYAM
- 4.For other MOOCs platform
- 5.For NPTEL/NMEICT/any other Government Initiatives
- 6.For Institutional LMS

Any 5 of the above

Any 4 of the above

Any 3 of the above

Any 2 of the above

Response: None of the above

File Description	Document
Details of e-content developed by teachers for e-PG-Pathshala, CEC (UG)	View Document

4.3 IT Infrastructure

4.3.1 Institution frequently updates its IT facilities including Wi-Fi

Response:

- A) Server:03 Nos. of servers HP DL 180E, Year of Purchase 2015, and one server HP ML 10, Year of Purchase 2014.
- B) Bandwidth: 32 Mbps (1:1)and 1 Gbps from National Knowledge Network (NKN) link.
- C) Wifi: Controller Based WiFi Networkhaving 250 nos. of access points that cover institutional area and hostels.
- D) Network: Back bone core chassis upgraded from1G to 10 G. Edge switches also replaced with latest models.
- E) Cloud Facility: Added under TEQIP III project chassis with 10 blade servers Dell Edge M640 that use Microsoft AZURE Platform.

4.3.2 Student - Computer ratio

Response: 4.76

4.3.3 Available bandwidth of internet connection in the Institution (Lease line)

?1 GBPS

500 MBPS - 1 GBPS

50 MBPS-250 MBPS

250 MBPS-500 MBPS

Response: ?1 GBPS

4.3.4 Facilities for e-content development such as Media Centre, Recording facility, Lecture Capturing System (LCS)

Response: Yes

File Description	Document
Facilities for e-content development such as Media Centre, Recording facility,LCS	View Document
Any additional information	View Document

4.4 Maintenance of Campus Infrastructure

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

Response: 0.39

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
58.83	8.77	0	0	0

File Description	Document
Details about assigned budget and expenditure on physical facilities and academic facilities	View Document

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:

The institute has a annual maintenance contract for various computers and network infrastructure established in the institute. The institute procures the entire IT infrastructure with the provision of three year maintenance.

The maintenance services for class rooms and laboratories is undertaken by the engineering wing of Chandigarh Administration where adequate funds are allocated by the Chandigarh Administration. The institute has a in-house maintenance section for the maintenance of the class room and laboratories.

All the class rooms of the institute have LCD projectors, green boards, white boards to take care of the audio video needs of the faculty for the teaching learning processes. The institute has converted 12 class rooms as smart class rooms to further augment the facilities available in the campus.

The institute has a well-equipped gymnasium having state of the art sports infrastructure and facility for the indoor games like badminton, table tennis. The institute has got well maintained sports ground for the outdoor games like cricket, volleyball, football, hockey and lawn tennis.

The institute has a well maintained swimming pool for students and faculty.

NAAC

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: 1.55

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
72	49	41	35	18

File Description

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

Document

[View Document](#)

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: 15.96

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
543	476	396	396	365

5.1.3 Number of capability enhancement and development schemes –

1. Guidance 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

7 or more of the above

Any 6 of the above

Any 5 of the above

Any 4 of the above

Response: 7 or more of the above

File Description	Document
Details of capability enhancement and development schemes	View Document

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

Response: 27.36

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
822	1554	803	361	272

File Description	Document
Number of students benefited by guidance for competitive examinations and career counselling during the last five years	View Document

5.1.5 The institution has an active international students cell to cater to the requirements of foreign students

Response:

The institute has MHRD scheme for Direct Admission of Students Abroad (DASA) where the students from various countries are admitted at PEC through MHRD. There is a representative of DASA student in the Student Affair Committee to take care of the needs of the DASA students. There are regular meetings organised for the DASA students by the management of the institutes. Special classes are organized for the students admitted under this category to take care of the special needs of the students.

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
Details of student grievances including sexual harassment and ragging cases	View Document

5.2 Student Progression**5.2.1 Average percentage of placement of outgoing students during the last five years****Response:** 43.66

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
324	251	260	276	269

File Description	Document
Details of student placement during the last five years	View Document

5.2.2 Percentage of student progression to higher education (previous graduating batch)**Response:** 5.88

5.2.2.1 Number of outgoing students progressing to higher education

Response: 39

File Description	Document
Details of student progression to higher education	View Document

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:** 20

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
94	0	0	0	0

5.2.3.2 Number of students appearing 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
94	0	0	0	0

File Description	Document
Number of students qualifying in state/ national/ international level examinations during the last five years	View Document

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: 0

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
0	0	0	0	0

File Description	Document
Number of awards/medals for outstanding performance in sports/cultural activities at national/international level during the last five years	View Document

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

Response:

Student Affairs Council is constituted every year at start of academic session with representation from various constituencies including class representatives, representation of foreign students, clubs, hostel etc. Detail regarding setting up of SAC are given in attached order. Meeting of SAC are held regularly in every semester, in which problems and suggestion of students are given proper hearing.

In addition to above there is student representation on Institute Academic Program Committee and representation as special invitee on Departmental Academic Program Committee. Students also have representation on other bodies like Scholarship & Prize Committee and Senate Student Affair Committee. The scholarship and prize committee has been setup to recommend general policy regarding different types of scholarship, stipend and review application of such policy. Student Affairs Committee deals with matters relating to discipline and conduct of students.

SR. NO.	CATEGORY	SPONSORING AUTHORITY	MEMBERS IN THE COUNCIL
1.	Class Representative (elected by class by majority votes in open voting in presence of teacher or already elected/unanimously selected representative of the class)	HOD's to depute one teacher each for 2nd to 4th year selections. HOD Applied Sciences will depute teachers to choose one representative from each branch.	Final Year 3rd year 2nd year 1st year 2nd, 3rd year representative Council in the C and 1st year HOD App representative
1.	ME Class Representative for each Department (Elected by class by majority votes in open voting in	HOD's to depute one teacher each for 1st and 2nd year selections.	2nd year 1st year

	presence of teacher or already elected/unanimously selected representative of the class)		1st & 2nd representative Council in the C.	
1.	01 Nomination of Ph.D student per department	HOD	PhD representative Council in the C.	1
1.	Institute Technical Society	ADSA-C	02 Chief Techn	1
1.	Sports Persons	ADSA-S	02	1
1.	Institute Club Secretaries	ADSA-C	02 Chief Club selected by the presence of	1
1.	N.S.S.	Coordinator NSS	02	1
1.	N.C.C.	Coordinator NCC	01	1
1.	Hostel Representative	ADSA-H	03	1
1.	T. & P. O.	T. & P. O.	01	1
1.	Members of Technical Societies	ADSA-C	01	1
1.	Counseling Services	Coordinator Counseling Services	01	1

1.	Co-opted member subject to a maximum of 4 students for excellence in any recognized field but not covered under any of the above from 1 to 9	Director, PEC in consultation with DSA	04
1.	NRI Representative	DSA	01

File Description	Document
Any additional information	View Document

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

Response: 111.4

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
100	113	140	123	81

File Description	Document
Number of sports and cultural activities / competitions organised per year	View Document

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:

In 2012, Mr. Gurvin Singh (1988 - Mechanical), MD, Coatec India contributed equipment for the Mechatronics lab of the institute costing Rs. 15.00 lakhs and training for the lab staff. Also, Mr. Kuljit Rana (1988 – Mechanical), donated two Ford Car internal combustion engines (petrol, diesel) for Mechanical Engineering department lab. In 2014, 1967 batch donated \$2500 (Rs. 1 Lakh) for alumni activities of the institute.

In 2015, 1965 Civil batch donated Rs 3.52 lakhs for 'Alumni Corpus Fund'. A part of this donation (Rs. 60,000) was utilised for meeting the expenses for making 'PEC ANTHEM'. Also, 1990 – Electrical batch donated two trainer kits (panels) with approximate cost Rs. 4.50 lakhs. These are installed in T&D lab in the Electrical department. Both the kits are used for study of digital protection relays.

Videocon Advanced Communication Lab was established by QTL (Connect Broadband & Videocon Telecom) at PEC Electronics and Communication Department on 19th November, 2015 under an MoU signed with Mr. Arvind Bali (1982- Mechanical), Director & CEO, Videocon Telecom and Connect Broadband.

In 2016, various alumni across several batches donated a total sum of Rs. 1.23 lakhs on for Alumni Corpus Fund and Infrastructural Support. Mr. Jagdish Mahajan (1963 - Electrical) donated Books for PEC Library. Sarvnipun Chawla Memorial Educational Trust donated Rs.50000/- to purchase books (General Engineering and Production Engineering) for the reference section of library. Also received a Corpus contribution of Rs.75000/- for Sarvnipun Chawla Memorial Meritorious Award to sustain the award for life time i.e. next 10 years (2017-2026).

Er. Praveer Sinha (1984- Electrical), CEO **TATA Power Delhi Distribution Ltd.** (TPDDL), Centre of Smart Grid Project was inaugurated on 9th November, 2016 under an MOU signed with (TPDDL). MoU signed with **Future Hitech Batteries Ltd.** (Er. Chander Mohan, 1953- Mechanical) to work together in the areas of Battery Packaging and Battery Management System including temperature regulation, charging and discharging electronics, battery state of charge etc.

In 2017, Er. Narinder Sharma (1967 - Civil), retd. Chief Engineer, BBMB established a Water Resources Heritage Centre in the Civil Engineering Department. Also, 1997- Mechanical batch contributed of Rs. 1.11 lakhs for Alumni Corpus Fund.

In 2018, 1965 batch again came forward and contributed an amount of Rs. 1.26 lakhs for initiating scholarships for students. In October this year, Er. Rajinder Kaura (1973- Electrical) inaugurated a Solar Technology Park in the campus costing Rs. 2.85 cr. under an MoU signed with the institute.

In 2018, **PEC 91 Foundation** (1991 batch) instituted a fee waiver award sponsoring tuition fees of needy students. Father of late alumnus instituted Anmol and Pranshu Garg Award (annual for 2 students of CSE) of Rs. 11000/- each. Mr. Sushil Khaneja (1965 - Production) instituted Sushil Khaneja Award (annual) of Rs. 25000/- on means cum merit basis for students. On the occasion of completing 50 years of graduation, 1968 batch instituted **1968 Alumni Golden Jubilee Fund Scholarship** (annual) of Rs. 4 Lacs (50,000/- each for for a branch). Dr. Vijay Vasandani, 1983 Batch alumnus, instituted an annual **Padma Award** of Rs. 50,000/- for female student. Since 2017, institute is receiving Rs 50000/- annually for 04 awards (Rs. 12500/- each) contributed by 1961 Alumni Batch for an Annual Books & Instrument Allowance to the students.

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

? 100 Lakhs

50 Lakhs -100 Lakhs

20 Lakhs -50 Lakhs

5 Lakhs -20 Lakhs

Response: 20 Lakhs -50 Lakhs

File Description	Document
Alumni association audited statements	View Document

5.4.3 Number of Alumni Association / Chapters meetings held during the last five years

Response: 10

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
5	3	1	1	0

File Description	Document
Number of Alumni Association / Chapters meetings conducted during the last five years	View Document

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 University

Response:

Punjab Engineering College (Deemed to be University) is one of the India's leading Institutions providing quality technical education in the field of engineering and technology, for more than 98 years. Currently, the institute is running 8 UG and 14 PG programmes in Engineering and Technology, and also PhD programmes in Engineering, Sciences, Humanities and Management. The vision of the institute is "To become centre of excellence in technical education and research and to occupy a place amongst the most eminent institutions of the nation". The institute has also set-up mission statements aligned with the vision of the institute with the ultimate goal of providing high quality value based technical education inclusive of all stake holders viz. students, faculty, staff, alumni and society in general. Currently, the institute is running 8 UG and 14 PG programmes in Engineering and Technology, and also PhD programmes in Engineering, Sciences, Humanities and Management. The current student strength across all courses stands at 3000. With recent increase in UG intake in place, the strength will increase to 4000 in the year 2020. The admissions to UG programmes are through JOSA and CSAB on the basis of national level JEE (Mains) test and to PG programme through CCMT and PhD programmes are through national level GATE examination. The academic and administrative practices of the institute are similar to IIT, e.g., i) the academic curriculum is based on Choice Based Credit System with flexibility in choice of electives, inclusion of minor and major specialisations, inclusion of MOOCs, credit transfer scheme, industrial internship and industrial visits, proper emphasis on basic and engineering sciences, humanities, management, communication skills, ethics and value systems and co-curricula, ii) The institute puts tremendous emphasis on student learning, creating learning environment, faculty and staff upgradation, research and development, entrepreneurship and incubation, industry interaction and alumni networking. Thus, with a long and cherished legacy and a focused aptitude of imparting quality and modern education in this fast changing world, the institute is on the path of progress.

6.1.2 The institution practices decentralization and participative management

Response:

The BOG includes eminent members from Industry, Research and academic organizations. The institute has a Board of Governors, Senate, Finance Committee and Building and Works committee. The Director is on a 5 year tenure preferably from an IIT. The Registrar is also on a five-year term. There is a deputy director. There are five Deans for academic affairs, faculty affairs, students affairs, research and industrial consultancy, and Alumni and corporate and international relations. They are associated with seven associate deans. There are 9 academic departments (8 Engineering and one applied sciences department), one academic center in Humanities and Management, 2 Centers of Excellence; Cyber Security Research Center, and COE in Industrial and Product Design, Computer Center providing high end network and data services to the whole campus. There are nine Heads of departments and seven heads of academic, research and service centers. Various functions of the institute are delegated at the institute/Department level committees such as- Academic Programmes, Research Committees, Purchase Committees, Disposal

Committee, Anti Ragging Committee, Sexual Harassment Committee, Grievance Redress Cell etc.

File Description	Document
Any additional information	View Document

6.2 Strategy Development and Deployment

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

Response:

The strategic plan of the institute for last five year is briefly indicated below:

A) Up gradation of Campus and Campus Facilities

- i) Construction of New hostels to cater fo rincrease in intake
- ii) Expansion of existing hostels
- iii) Augmentation of Sports facilities
- iv) Renovation of old physical infrastructure
- v) Improvement in landscape and green areas
- vi) Residential housing for faculty and staff

B) Upgradation of Laboratories

- Modernization of Labs and removal of old equipment
- Creation of new laboratories through in-house resources and ublicivate

Partnership(PPP)

C) Improvement in Course Curricula and Teaching Aids and increase in intake

- ii) Linkages with industry ,foreign institutions and research organizations
- iii) Conduct of industry and research weeks
- iv) Creating industry sponsored centers and labs
- v) Initiating new academic programmes
- vi) ICT based teaching and learning processes

vii) Increase of intake in the programmes based on the industry demand

D) Faculty Up gradation and R&D

- i) Career Advancement Scheme (CAS)
- ii) New recruitment Drive by focusing on hiring quality faculty
- iii) Increase in Faculty Positions
- iv) Provision of Sabbatical Leave
- v) Concept of adjunct/ visiting faculty /Research Chairs

vi) Creation of Research Centers

E) Student and Alumni Connect

- i) Developing informative website
- ii) Creation of Entrepreneurship and Incubation Centers
- iii) Creation of Career guidance center
- iv) Reaching out alumni(exclusive alumni website)
- v) Harnessing Alumni Intellect

F) Efficient Management of PEC

- i) Streamlining of process
- ii) Automation in processes
- iii) Restructuring of non-teaching of staff for greater efficiency
- iv) Staff Welfare

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

Response:

The institute is governed by Chandigarh Administration through Board of Governors (BoG) having members from Academics, Industries, Administration and Alumni. The BoG is headed by an eminent

industrialist.

The institute has full time director and registrar and various faculty members as Deans and Deputy Director to manage the institute.

The institute has the following bodies to manage the institute:-

1. Academic Committees

1. Senate
2. Standing Committee of Senate
3. Institute Academic Programme Committee (IAPC)
4. Department Academic Programme Committee (DAPC)
5. Senate Student Affair Committee
6. Scholarship and Prize Committee

1. Finance Committee
2. Estate and Works Committee

The institute has faculty and staff grievance committee to redress the grievances of the faculty and staff.

The institute follows career advancement scheme of UGC for the faculty and regular Department Promotion Committee (DPC) are convene for the promotion of technical and administrative staff.

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**

All 5 of the above

Any 4 of the above

Any 3 of the above

Any 2 of the above

Response: Any 3 of the above

File Description	Document
Details of implementation of e-governance in areas of operation Planning and Development, Administration etc	View Document

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

Response:

The institute has several committees and bodies constituted for various purposes. The meetings of these committees are held on regular basis. The minutes of the meeting are recorded and got approved from Competent authority after which the minutes are notified. The actions is taken by the required quarters and Action Taken Reports are submitted. To name some of the important committees and the frequency at which their meetings are held, following may be noted:

1. Board of Management: Quarterly
2. Academic Senate: 3-4 times in a year
3. Deans Committee: 3-4 times in a year
4. Head of the Departments/Centres Committee: Every month
5. Institute Academic Program Committee: 3-4 times in a year
6. Finance Committee: Atleast twice in a year
7. Institute Purchase Committee: Time to Time
8. Hose Alloettment Committee: Time to Time
9. Faculty and Staff Grievance Adressal committee: 3-4 times in a year
10. Student Affair Council: 3-4 times in a year
11. Placement Advisory Council: 3-4 times in a year

6.3 Faculty Empowerment Strategies

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

Response:

Faculty: There is provision for a Professional Development Allowance (PDA) upto 3.00 lacs per three years to encourage the faculty for their professional development. This includes financial assistance for membership of professional bodies, procurement of books, computer peripherals, patent fee reimbursement and travel grants and registration fee for participation in professional activities in India and Abroad in the field of their interest. The faculty is encouraged for carrying out industrial consultancy and the revenue generated is shared with faculty as Professional Development Fund. There are provisions for Study Leave, Sabbatical leave, Special Casual Leave/ Project Leave, training through Faculty Development Programmes (FDPs) to be availed by the faculty for their knowledge updation.

Staff: Professional development / administrative training programs organized by the institute for non-teaching staff during the last five years.

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:** 21.55

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
28	36	35	47	10

File Description**Document**

Details of teachers provided with financial support to attend conferences, workshops etc during the last five years

[View Document](#)**6.3.3 Average number of professional development / administrative training programs organized by the University for teaching and non teaching staff during the last five years****Response:** 1.4

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
0	1	2	4	0

File Description**Document**

Details of professional development / administrative training programs organized by the University for teaching and non teaching staff

[View Document](#)**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:** 7.74

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
9	16	18	8	5

File Description	Document
Details of teachers attending professional development programs during the last five years	View Document

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

Response:

PEC Chandigarh has Annual Self-Assessment for the Performance Based Appraisal System (PBAS) for teaching staff. It is As per Clause 6.0.2 of Schedule 6.0.0 of UGC regulations. The form is available on PEC website. Each teaching staff member is asked to fill the PBAS after the end of Academic year. Filled PBAS forms are evaluated in Dean Faculty Affairs (DFA) Office. DFA forms a committee of 3-4 members for accomplish this work. The API Score evaluated through PBAS of faculty members are also used for their promotion through Career Advancement Scheme (CAS).

Institution has Annual Performance Appraisal Report for non-teaching staff. Non teaching staff fills Annual Performance Appraisal Report after end of each Academic year. Faculty members associated with non-teaching staff verifies and numerically grade the filled report. Numerical grading is done as follows:-81-100% Outstanding, 61-80% Very Good, 51-60% Good, 31-50% Average, Below 30% Below Average. After this these evaluated forms are sent to Registrar. Further Registrar reviews this evaluation and amends if any. This evaluation is used for promotion of non-teaching staffs.

File Description	Document
Any additional information	View Document
Link for Additional Information	View Document

6.4 Financial Management and Resource Mobilization

6.4.1 Institution conducts internal and external financial audits regularly

Response:

The institute has AC (F&A) and Section Officers deputed by Chandigarh Administration for financial management and auditing of financial matter of the institute. External financial audits are conducted by Accountant General (AG), Union Territory, Chandigarh. The institute has appointed Chartered Accountant for auditing various other institute funds. The AG office conducts the auditing of the government allocated

funds once in the year. The institute follows general financial rules (GFR) for all purchases of goods and services.

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: 209

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
205.0	0	4.0	0	0

File Description

Document

Details of Funds / Grants received from non-government bodies during the last five years

[View Document](#)

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

Response:

The institute receives Grant-in-Aid from Chandigarh Administration, which includes the plan grant (~ 20 Cr) and non-plan grant (~ 27.5 Cr). There is an academic fee collection of the order of ~35 Cr. Thus the budget of institute is ~ 80 Cr. The expenditure of the institute on account of salary & establishment, scholarships, procurement of equipment, research & development, capital works is approximately 77 Cr. The institute has funding from other Sources such as Sponsored R & D Projects, TEQIP III project, Kalpana Chawla Chair from Indian Railways with an Endowment fund (~10 Cr). Alumni of the institute also make contribution in establishing laboratories, donating equipment's and scholarships and fee waiver for students.

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:

1. To develop a quality system for conscious, consistent and catalytic programmed action to improve

the academic and administrative performance of the PEC.

- 2.To promote measures for institutional functioning towards quality enhancement through internalization of quality culture and institutionalization of best practices.
- 3.To develop a system for conscious and consistent improvement in the performance of the institution.
- 4.To channelize the efforts and measures of the institution towards academic excellence.
- 5.Development of smart classes facility.

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:

The IQAC Cell has been set up in PEC as per the UGC guidelines in August 2010 under the Chairmanship of Director, PEC. Goals and functions of IQAC are as under:-

- To develop a quality system for conscious, consistent and catalytic programmed action to improve the academic and administrative performance of the PEC University of Technology.
- To promote measures for institutional functioning towards quality enhancement through internalization of quality culture and institutionalization of best practices.
- To develop a system for conscious and consistent improvement in the performance of institution.
- To channelize the efforts and measures of an institution towards academic excellence.

IQAC has well set up procedures through which academic information is collected and assessment of obtaining learning outcomes is done.

Institute under takes regular monitoring of teaching processes through mid-term attendance evaluation and monitoring of course delivery. Cases of students who are falling short of attendance and who have shown poor performance so far are reported by the instructor separately, and their parents are informed by the department about the same. The percentage of syllabus covered by the instructor is also monitored and instructors are issued advice if so required. The question papers of end term examination are moderated and checked conformance to Bloom taxonomy and course outcomes.

At time of grade moderation a thorough analysis of assessment procedures, quality of question paper, continuous assessment and other relevant parameters are also deliberated upon.

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

Response: 6

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
7	6	6	6	5

File Description	Document
Number of quality initiatives by IQAC per year for promoting quality culture	View Document

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

Any 4 of the above

Any 3 of the above

Any 2 of the above

Any 1 of the above

Response: Any 3 of the above

File Description	Document
Details of Quality assurance initiatives of the institution	View Document

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:

1. E-Classroom facilities are provided to every department for a conducive learning/ interaction between faculty and student.
2. Industrial visits are arranged periodically by the department to give the students a practical knowledge and exposure to industrial practice.
3. The institute has a comprehensive placement department which is executed through qualified faculty and experts from outside.
4. The major improvement took place in the following aspects.
 - The language lab has been developed.

- Hybrid Moocs courses.
- Reforms in examination system for both UG and PG. Weightage of marks are based on the course outcomes and bloom's taxonomy.

- 1.Remembering
- 2.Understanding
- 3.Applying
- 4.Anaylsis
- 5.Evaluating
- 6.Creative is made on internal part of moderation process.
- 7.New PG curriculum

- Fractal credit system:- In fractal system, a semester is divided into six segments. Each segment is of 7 contact hours and 0.5 credits.
- —Compulsory course on Machine Learning), Soft Skill & Management (with fractal credits for Communication Skills, Management & Entrepreneurship and Professional Ethics) and Engineering Mathematics (with fractal credits for three elective courses from Engineering Mathematics basket).
- —20% courses per semester can be offered in blended mode with MOOCs/ industry.
- Mandatory Industrial visit during Summer Vacation.

Increased usage of ICT tools in teaching learning process..

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: 5

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
3	1	0	1	0

File Description

Document

List of gender equity promotion programs organized by the institution

[View Document](#)

7.1.2 Institution shows gender sensitivity in providing facilities such as

- a) Safety and Security
- b) Counselling
- c) Common Room

Response:

The institute has a girl's common room and enough washrooms to take care of needs of the various type of student in the institute. The institute has a women empowerment cell in the institute. A sexual harassment committee to actively deal with the complaints of the girl students has been constituted. This is as per the Supreme Court guidelines. Adequate numbers of hostels are available for the girls students within the campus. Women security staff has been deployed in all the hostel, so that girls students' needs can be taken care off.

Achaar

In this project, the NSS unit of PEC gets achaar prepared from the women of Self Help Groups. The unit provides them with the raw materials (mirchi, oil, salt, etc) at low costs and they prepare the achaar. The prepared achaar is sold at a price cheaper than the market price by NSS volunteers in the college. The money gained from selling the achaar is given to these women as compensation for their labour. This helps in their growth and fulfils the objective of Women Empowerment. It helps generate some employment for these women and provide them an identity of their own.

7.1.3 Percentage of annual power requirement of the Institution met by the renewable energy

sources**Response:** 45.86

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

Response: 1000

7.1.3.2 Total annual power requirement (in KWH)

Response: 2180.44

File Description**Document**

Details of power requirement of the university met by renewable energy sources

[View Document](#)**7.1.4 Percentage of annual lighting power requirements met through LED bulbs****Response:** 100

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

Response: 350

7.1.4.2 Annual lighting power requirement (in KWH)

Response: 350

File Description**Document**

Details of lighting power requirements met through LED bulbs

[View Document](#)**7.1.5 Waste Management steps including:**

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

Response:

SOLID WASTE MANAGEMENT IN PUNJAB ENGINEERING COLLEGE (Deemed to be University)

Solid Waste Management Rules notified by MoEF&CC in 2016 define solid waste as solid or semi-solid domestic waste, sanitary waste, commercial waste, institutional waste, catering and market waste and other non residential wastes, street sweepings, silt removed or collected from the surface drains, horticulture waste, agriculture and dairy waste, treated bio-medical waste.

The accumulation of wastes in different forms causes serious environmental hazards. SWM Rules, 2016 have decentralized the processing and treatment of solid wastes. It is stated that ‘*All gated communities and institutions with more than 5,000 sqm area shall in partnership with the local body, ensure segregation of waste at source by the generators as prescribed in these rules, facilitate collection of segregated waste in separate streams, handover recyclable material to either the authorised waste pickers or the authorized recyclers. The bio-degradable waste shall be processed, treated and disposed off through composting or bio-methanation within the premises as far as possible. The residual waste shall be given to the waste collectors or agency as directed by the local body*’.

Management of Solid Waste in PEC

1. **Collection** : Mixed waste from institutional area, residential area, hostels (6 No.), PEC market (commercial area) and open area is daily collected in manually driven rehris and taken to *SehajSafai Kendra* located within PEC. Approximately 500 kg of waste arrives daily at *SehajSafai Kendra*. Sanitary waste from girls’ hostels (2 No.), consisting mainly of sanitary napkins, is collected as biomedical waste and PEC pays an external agency for collection, treatment and disposal of this waste.
2. **Segregation of Waste** : The waste is manually segregated into biodegradable and non-biodegradable waste. The biodegradable fraction is about 50% of the waste reaching *SehajSafai Kendra*.
3. **Vermicomposting of Biodegradable Waste** : The biodegradable waste is put in vermi-pits. There are 7 No. pits of size 8’x4’ and 2’ deep. There is provision for temporarily covering the pits, which under favourable atmospheric conditions are left open. In each pit the waste is kept for about 60 days. Mature compost from the pits is used in PEC lawns and nursery.
4. **Disposal of Non-Biodegradable Waste** : The non-biodegradable waste is collected by Chandigarh Municipal Corporation trucks every alternate day from the *SehajSafai Kendra*.

In this context, a week Short Term Course on “Sustainable Practices in Solid Wastes Management” was organized by the Civil Engineering Department of the institute from June 11-15, 2018, sponsored by TEQIP-III. The programme was attended by officers of M.C.s of Chandigarh, Mohali, Panchkula and from Punjab Municipal Infrastructure Development Co., several members of resident welfare and market associations of the tricity, faculty and students from Universities and Engineering Colleges. During the short term course, the process of vermi-composting being done at PEC was commended by the Expert Mr. Sultan from Ecoscience Research Foundation, Chennai. The expert interacted with the sanitation workers of PEC in a special session where the workers were apprised about the SWM Rules, 2016 and ways of improving vermi-composting process.

7.1.6 Rain water harvesting structures and utilization in the campus

Response:

Harvesting Structure

Rainwater harvesting installed in the newly constructed New Academic block of PEC and it is a technology used to collect the rain water and recharge the same water to earth. Rainwater infiltration is another aspect of rainwater harvesting playing an important role in storm water management and in the replenishment of the groundwater levels. Rainwater harvesting has been practiced for over 4,000 years throughout the world, traditionally in arid and semi-arid areas, and has provided drinking water, domestic water and water for livestock and small irrigation. Today, rainwater harvesting has gained much on significance as a modern, water-saving and simple technology.

Several factors should be considered when selecting rainwater harvesting systems for domestic use:

- Type and size of catchment area
- Local rainfall data and weather patterns
- Length of the drought period
- Alternative water sources
- Cost of the rainwater harvesting system.
- When rainwater harvesting is mainly considered for irrigation, several factors should be taken into consideration. These include:
 - Rainfall amounts, intensities, and evapo-transpiration rates.
 - Soil infiltration rate, water holding capacity, fertility and depth of soil.
 - Crop characteristics such as water requirement and length of growing period.
 - Hydrogeology of the site.

BENEFITS OF RAINWATER HARVESTING

- Rainwater is a relatively clean and free source of water.
- Rainwater harvesting provides a source of water.
- It is socially acceptable and environmentally responsible.
- It promotes self-sufficiency and conserves water resources.
- It reduces storm water runoff and non-point source pollution.

It uses simple, flexible technologies that are easy to maintain.

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:

—Vehicle Free Zone & Vehicle Stickers

- The institute has a policy for campus vehicle-free zone. Under this policy:

- —Hostelers (other than BE – 4th year) are not allowed to keep vehicles
- —To be parked in Student Designate Parking Area
- —Walk through entire campus
- —Students, faculty and staff issued Parking Stickers

Green landscaping with trees and plants

Several tree plantation campaigns have been carried out at PEC. Some of them are:

1. jointly by SBI, Chandigarh, as a part of the bank's Go Green Campaign on July 1 every year
2. The massive drive every year with Infosys
3. Whistling Pines Park, a 4600-sq-m state-of-the-art botanical garden at PEC
4. Van Mahoutsav organised by NSS unit who plant about 300 saplings every year
5. The institute has a green landscape with a separate horticulture Department which takes care of the development and maintenance of landscape in the campus

Research Project to encourage Public Transportation and ease Congestion

The institute has received a funding of 56 lacs from ITRA, Media Lab Asia, Deity to execute the project entitled “Communication Assisted Road Transportation Systems” Dec 2013 – Jan 2019; with a Total grant of 1.30 cr

The overall goal is to alleviate road traffic issues using information gathered from and disseminated via mobile phones. This has been attempted by creating an overarching communication framework that can help ease congestion, while also making it much easier for consumers to use public transportation systems.

Research Project to improve Environment especially air Quality

The institute has received funding to execute the Research Project to improve Air Quality and Environmental Monitoring sponsored by Department of Science & Technology & Environment to execute the project entitled “**Real Time Ambient Air Quality Monitoring and Reporting using Sensors: A Pilot Study**, Department of Science & Technology & Environment; t; Rs 12.0 lacs (completed)

The institute has also received funding to execute the Research Project **CityProbe: A City-Scale Pervasive Sensing System for Monitoring Road Conditions, Air and Sound Pollution, of 2.5 crores** and is in collaboration with institutions of repute: IIT Bombay, IIT Kharagpur and NIT Durgapur, funded by **MHRD** under IMPacting Research INnovation and Technology (IMPRINT – INDIA) research grants with an aim to improve pollution levels (air, sound) pollution levels and to determine road conditions in real-time.

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

Response: 0.06

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
8.887	0.71	0	0.003	0

File Description

Document

Details of expenditure on green initiatives and waste management during the last five years

[View Document](#)

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: C. At least 4 of the above

File Description

Document

Resources available in the institution for Divyangjan

[View Document](#)

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

Response: 5

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
1	1	1	1	1

File Description	Document
Number of Specific initiatives to address locational advantages and disadvantages	View Document

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

Response: 21

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
5	4	4	4	4

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

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

Response: Yes

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	View Document

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

File Description	Document
Any additional information	View Document
Provide link to Courses on Human Values and professional ethics on Institutional website	View Document

7.1.16 The institution functioning is as per professional code of prescribed / suggested by statutory bodies / regulatory authorities for different professions**Response:** Yes**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:** 20

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
4	5	4	4	3

File Description	Document
List of activities conducted for promotion of universal values	View Document

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

- PEC celebrated the 48th Engineer's Day to commemorate the birthday of Sir M. Visvesvaraya, a legendary engineer and a scholar.
- The two-day National Seminar on 'Space Flight: Challenges and Opportunities' was held in the auditorium of Punjab Engineering College (deemed to be university), Chandigarh on February 01-02, 2019. Notably, the seminar was conducted to commemorate the 16th death anniversary of

Dr. Kalpana Chawla, the star alumni of Aerospace Engineering Department of PEC, who disappeared in the sky during Columbia Disaster on 1st February 2003. The event was organized in association with Aeronautical Society of India (Chandigarh Branch) under the sponsorship of TEQIP-III.

- The Punjabi Editorial Board in association with Hindi Editorial Board organized number of events like Poems, Plays, Contests and songs to celebrate Martyrdom Day of Bhagat Singh, Rajguru & Sukhdev on 23rd March as “Remembering Real Heroes” in PEC auditorium.
- PEC celebrates 15th August as Independence day and 26th January as Republic day every year with full participation of students, staff and faculty.

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

Response:

Finance: The fees of the students is deposited on-line through banking system. All the payments towards purchase of equipment, stationery and all logistics are made through cheque. The amount of salary of all the staff members is made in their bank account.

Academic: The recruitment of all the faculty position is done through open advertisement. The courses along with their details like eligibility, tuition fees, examinations fees etc., run by the University are also uploaded on the website of the University and published on the brochure.

The admissions of the students are made through JEE Mains Test and through JOSAA. The examination program for various examinations is notified to students through website and result is published through the gazette after seeking approval from the Senate. The entire evaluation process is automated through the application software and all grades etc are maintained in the database since 2005 ie becoming a Deemed to be University. The time table of the classes is notified on website and notice board.

Administrative: Most of the positions in the University are recruited through open advertisement in State/National newspaper. The rules regulating the services and conduct of the staff members have already been framed and notified and uploaded on the website of the Institute

The recruitment policy, placement and increments are well defined and notified to all the staff members. Any matter relating to discipline is concerned is dealt with as per the rules notified.

Auxiliary functions: All the functions relating to purchase, library, games, sports, mess, hostel are well notified and uploaded on the website of Institute.

7.2 Best Practices

7.2.1 Describe at least two institutional best practices (as per NAAC Format)

Response:

One semester mandatory Internship Programme

PEC started with one whole semester based internship which is on-the-job training for Pre-Final year students of BTech programme. It is a mandatory semester (6th Sem) long internship to be undertaken in leading organizations as part of their curriculum. These Internship training enables our students to get exposure in tackling real time problems that occur in the working of an individual entity and also offers various occasion for interns to expand familiarity in their chosen area of work, develop professional network links, work ethics and build interpersonal skills etc. These internships, along with various industrial visits keep the students informed about latest industrial trends.

Employers too benefit from an internship arrangement as it gives access to interns with some skills to execute relevant tasks for the employer. Many of the interns end up with Pre Placement Offer (PPO) with the same organisation in which they are interned. Their worth to the organisation may be greater than before by the fact that they require modest or less training.

The duration of the internship is minimum 16 weeks to a maximum of 24 weeks to be undertaken between January to July. This is a 20 credit course, compulsory for all students where the student is evaluated both by the mentor from industry and a faculty mentor from the Institute. The training also includes at least one visit by the mentor faculty to the organizations, both for evaluating the student as well as fostering Institute – Industry Interaction.

The evaluation is done as follows:

- Credits to be given by the Industry mentor: 12
- Credits by Faculty Coordinator, Adjunct faculty, Experts/PEC Alumni: 04
- Evaluations by Department on the basis of Report, Presentation, Viva etc: 04

Total Credits 20

Distinctiveness of Internship

1. Internship leads to the intern's individual development through challenging occupational coursework.
2. A typical and worthy extra-curricular activity that helps develop credentials for their semester.
3. It is designed and planned through consultation with the college Placement Advisory Committee (CDGC-PAC) so as to fit into the undergraduate practice.
4. Internship involves close direction or mentoring by mentor from industry and college..
5. It includes work experiences that go together with classroom learning.

6. It too ends in an appraisal process at the wrapping up of the internship, leading to Pre Placement offer (PPO) in many of the cases.

Fast Tract Academic Administration

Examination results within 15 days of the completion of exams. Final examination scripts to be shown to students. Scripts and records to be preserved for one term by the instructor. A totally transparent system of grading where students can examine their graded answer books at all stages within 96 hours of the end of examinations.

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:

Thrust of Engineering Education in to follow a field oriented, practice based, industry oriented approach. This has been done by adding following components to the curriculum:

- Full semester industry-internship for greater exposure to industry practice.
- Minor project in 5th semester
- Capstone Projects in 7th & 8th semester
- Industry Visits by the students after third semester
- Emphasis on project and design based learning in labarotaries

The Meritoriousness of internship and capstone projects which can be taken with industry:

1. Real world experience: Participating in an internship allows an intern to get a perspective on potential employment once they are done studying. It helps them by apply the concepts that they learned in their classrooms. Such an exposure creates a smoother transition for Interns from the classroom to the work-station.

2. Personal development: Personal development includes building up of soft-skills such as personal work ethic, inter-personal skills, and also the technical hard skill like execution, and refining of analytical capabilities. Both the categories have been shown to play an important part in the building up of human capital. Internship programmes facilitate the build-up of such capital to some extent.

3. Networking: Interns during their short stint would likely get to know a lot of pros and this knowledge would help them find new opportunities and make new connections. That is they could use these contacts for future references or for work related advice.

4. Choices: Decisions about careers are quite perplexing, more so when one has not discovered what one really wants to do. However exposure beyond formal learning can go a long way resolving such early age dilemmas. So, with the knowledge and experience that Interns collect from their internships, individuals would be better placed to make choices about their future career.

5. Pre Placement Offer : A student can avail the opportunity of getting pre placement offer, by the time student joins back for his/her final year

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5. CONCLUSION

Additional Information :

- Adopted UG curriculum as implemented in IITs from 2014-15 session [innovative features such as: more flexibility with regard to choice of courses, increase in percentage/component of department core courses and elective courses, credits to the Co-Curricular Activity courses (such as NCC, NSS, NSO, Sports and other Proficiency), courses on communication skills, technical communication and ethics and self-awareness, basket of humanities and management courses, basket of basic sciences courses, basket of engineering science courses, concept of minor specialization, concept of major specialization, full semester internships in industry, industrial visits, reduced load in the final year, continuous evaluation of students through assignments, quizzes, proctored examinations]
- Centers of Excellence: Cyber Security Research Center, and COE in Industrial and Product Design, Computer Center providing high end network and data services to the whole campus
- RFID enabled Central Library
- Entrepreneurship and Incubation center to promote start-up businesses
- Center for Development of Teaching and Learning under TEQIP-III for training on teaching and learning methodologies
- Hire visiting and emeritus faculty with more than 20 years of industrial and research experience and hire adjunct faculty working in industries to spend time at campus and interact with students on special problems and case studies.
- Industries to design 1 credit and 2 credits courses
- Alumni to have online sessions with the students and faculty on curriculum design and development

Concluding Remarks :

The institute has put its best effort for preparing the SSR document. The institute will be happy to answer queries in this regard or share any new information desired by NAAC.