

2017

# Annual Quality Assurance Report



Thapar Institute of Engineering &  
Technology, Patiala  
15/12/2017

## The Annual Quality Assurance Report (AQAR) of the IQAC - 2017

### Part – A

**AQAR for the year**

2017

#### 1. Details of the Institution

1.1 Name of the Institution

Thapar Institute of Engineering and Technology

1.2 Address Line 1

Patiala

Address Line 2

Punjab

City/Town

Patiala

State

Punjab

Pin Code

147004

Institution e-mail address

[dopa@thapar.edu](mailto:dopa@thapar.edu)

Contact Nos.

9815604119

Name of the Head of the Institution:

Prof. Prakash Gopalan

Tel. No. with STD Code:

0175 2393001

Mobile:

8283827635

Name of the IQAC Co-ordinator:

Dr Ajay Batish

Mobile:

9815604119

IQAC e-mail address:

abatish@thapar.edu

**1.3 NAAC Track ID** (For ex. MHC0GN 18879)

**OR**

**1.4 NAAC Executive Committee No. & Date:**

(For Example EC/32/A&A/143 dated 3-5-2004.

This EC no. is available in the right corner- bottom of your institution's Accreditation Certificate)

EC (SC)/15/ A & A 22.3 dated May 25, 2016

**1.5 Website address:**

www.thapar.edu

**Web-link of the AQAR:**

<http://www.thapar.edu/images/AQAR%202015-16.pdf>

**1.6 Accreditation Details**

Sl. No.	Cycle	Grade	CGPA	Year of Accreditation	Validity Period
1	1 <sup>st</sup> Cycle	B <sup>++</sup>		2002	5 years
2	2 <sup>nd</sup> Cycle	A	3.15	2009	5 years
3	3 <sup>rd</sup> Cycle	A	3.14	2016	5 years
4	4 <sup>th</sup> Cycle				

**1.7 Date of Establishment of IQAC:** DD/MM/YYYY

04/12/2009

**1.8 Details of the previous year's AQAR submitted to NAAC after the latest Assessment and Accreditation by NAAC** ((for example AQAR 2010-11 submitted to NAAC on 12-10-2011)

**i. AQAR 2012-13 submitted to NAAC on 11/10/2013**

- ii. AQAR\_2013-14 Submitted to NAAC on 30/12/2014
- iii. AQAR\_2014-15 submitted to NAAC on 30/12/2015
- iv. AQAR\_2015-16 submitted to NAAC on 15/12/2016
- v. AQAR\_2016-17 submitted to NAAC on 15/12/2017

#### 1.9 Institutional Status

University State ☐ Central ☐ Deemed ☒ Private ☐

Affiliated College Yes ☐ No ☒

Constituent College Yes ☐ No ☒

Autonomous college of UGC Yes ☐ No ☒

Regulatory Agency approved Institution Yes ☒ No ☐

(E.g. AICTE, BCI, MCI, PCI, NCI)

Type of Institution Co-education ☒ Men ☐ Women ☐

Urban ☒ Rural ☐ Tribal ☐

Financial Status Grant-in-aid ☐ UGC 2(f) ☐ UGC 12B ☐

Grant-in-aid + Self Financing ☒ Totally Self-financing ☐

#### 1.10 Type of Faculty/Programme

Arts ☐ Science ☒ Commerce ☐ Law ☐ Phys Edu) ☐

TEI (Edu) ☐ Engineering ☒ Health Science ☐ Management ☒

Others (Specify)

#### 1.11 Name of the Affiliating University (*for the Colleges*)

NA

1.12 Special status conferred by Central/ State Government-- UGC/CSIR/DST/DBT/ICMR etc

Autonomy by State/Central Govt. / University

Deemed to be University

University with Potential for Excellence

NO

UGC-CPE

DST Star Scheme

UGC-CE

UGC-Special Assistance Programme

✓

DST-FIST

✓

UGC-Innovative PG programmes

Any other (*Specify*)

TEQIP - II

**2. IQAC Composition and Activities**

2.1 No. of Teachers

7

2.2 No. of Administrative/Technical staff

9

2.3 No. of students

2

2.4 No. of Management representatives

1

2.5 No. of Alumni

1

2. 6 No. of any other stakeholder and

0

Community representatives

2.7 No. of Employers/ Industrialists

1

2.8 No. of other External Experts

3

2.9 Total No. of members

20

2.10 No. of IQAC meetings held

3

2.11 No. of meetings with various stakeholders: No. Faculty    
 Non-Teaching Staff  Students  Alumni  Others

2.12 Has IQAC received any funding from UGC during the year? Yes  No   
 If yes, mention the amount

2.13 Seminars and Conferences (only quality related)

(i) No. of Seminars/Conferences/ Workshops/Symposia organized by the IQAC

Total Nos.	International	National	State	Institution Level
<input type="text" value="2"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="2"/>

(ii) Themes

2.14 Significant Activities and contributions made by IQAC (update)

*Attached as annexure-I, II*

2.15 Plan of Action by IQAC/Outcome

The plan of action chalked out by the IQAC in the beginning of the year towards quality enhancement and the outcome achieved by the end of the year \*

Plan of Action	Achievements
<i>Attached as annexure I and II</i>	

\* Attach the Academic Calendar of the year as Annexure. (Academic calendar is attached as annexure-III)

2.15 Whether the AQAR was placed in statutory body Yes  No   
 Management  Syndicate  Any other body

Provide the details of the action taken

*Attached as annexure I and II*

Part – B

Criterion – I

## 1. Curricular Aspects

### 1.1 Details about Academic Programmes

Level of the Programme	Number of existing Programmes	Number of programmes added during the year	Number of self-financing programmes	Number of value added / Career Oriented programmes
PhD	All Disciplines	Nil	All	All
PG	29	0		
UG	11 (BE/BTECH)	1	All	All
PG Diploma				
Advanced Diploma				
Diploma				
Certificate				
Others				
<b>Total</b>	<b>44</b>	<b>1</b>		

Interdisciplinary	2(Mechatronics and Electronics & Computer Engg)			
Innovative				

### 1.2 (i) Flexibility of the Curriculum: CBCS/Core/Elective option / Open options

#### (ii) Pattern of programmes:

Pattern	Number of programmes
Semester	All
Trimester	NIL
Annual	Nil

### 1.3 Feedback from stakeholders\* Alumni (On all aspects)

	Alumni	Parents	Employers	Students
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Mode of feedback :	Online	Manual	Co-operating schools (for PEI)	<input type="checkbox"/>
	<input checked="" type="checkbox"/>	<input type="checkbox"/>		

### 1.4 Whether there is any revision/update of regulation or syllabi, if yes, mention their salient aspects.

The faculty of the program under the overall supervision of the statutory bodies of the University, the Senate or the Planning and Monitoring Board oversee the design and development process leading to course creation, modification, and evaluation so that the activity is carried out in a planned manner. The detailed planning for this activity is the responsibility of the Department Head and the program faculty. The systematic process of design and development includes the activities & sub activities including techniques & organizational interfaces and the time frame for completion of various activities. The plans are updated, as the instructional design evolves. The design and development process generally begins with a need analysis report which comprises of (i) Stated customer needs (ii) Implied needs (iii) Overall goals of Instructions (iv) Relevant standards i.e. AICTE and UGC guidelines and Curricula of Entrance Tests like Indian Engineering Services (IES) and Graduate Aptitude Test for Engineers (GATE), etc. and (v) General characteristics of target population.

Organizational and Technical interfaces between different faculty and external expert groups providing input to the instructional design are defined, committees are constituted and their reports are documented. Faculty members from different disciplines connected with the design & development activity are associated with the process. The updation/restructuring is carried out as the design process progresses. Clear responsibilities are assigned and effective communication is ensured.

The requirements of instructional design are determined and recorded. For instructional design, the input is taken from various sources. Input requirements are clearly understood and reconciled. The design input may come from:

- Need analysis & Reviews.
- Recommendations from alumni, senior management, industry etc.
- Success/failure reports of similar courses & programs.
- Published literature relevant to programs.
- Boundary condition w.r.t GATE, IES, IAS curricula etc.

The process of determining solutions to satisfy the identified needs is laid down and documented. Instructions are designed by incorporating these solutions. The analysis and mappings are recorded. The design output at this stage is taken as the initial design for subsequent reviews. The output of instructional design & development is documented in the form of a report named “Curriculum and Scheme of Courses”. Through various reviews and verifications, it is ensured that the design output meets the design input requirements.

The design output report includes:

- The types and levels of skill and knowledge to be imparted
- Details of need analysis and mappings at various stages
- Scheme of courses and the detailed syllabi
- Instructional strategies.
- Selection of instructional aids for delivery.
- Assessment and evaluation.

The output documents like curriculum and instructional strategies are reviewed and approved before release at various levels and stages. Reviews are conducted at defined stages of the curriculum Design, in which faculty members from the concerned area as well as experts from amongst the peer group from within and/or outside the University are associated. Records of the reviews are maintained. Based on

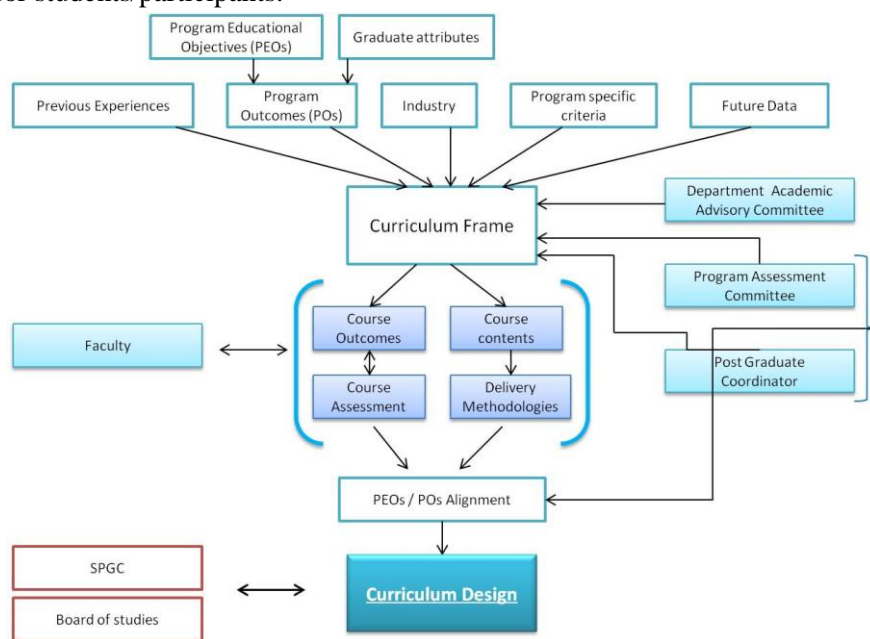


the reviews, the design is updated and brought into document control for revision. The design reviews are carried out at the end of each of the following stages using prescribed check lists:

- Need analysis
- Design and review by Board of Studies (BOS)
- Review by Senate Undergraduate Committee (SUGC)
- Review by Senate
- Review by Board of Governors (BOG)

Verification of design is conducted by comparison of the design with similar courses run by prestigious Universities. Evolved designs are also verified by taking independent opinion of the experts from amongst the peer group from within or outside the University. The new curriculum is introduced only after adequate verification.

New/revised curriculum and instructional design is made applicable to the prospective students. The curriculum is validated in the initial stages of its introduction by taking a feedback from students and faculty members regarding the effectiveness and applicability of the curriculum, with regard to the documented needs. Necessary changes, if required, are made to ensure that the design conforms to defined needs of the students. Wherever required, an additional instructional sessions and allied inputs are arranged for students/participants.



The general steps followed in course creation, modification, and evaluation of curriculum are as under:

- The need for starting a new programme or course(s) may arise from interaction with Industry, Faculty, Students, Alumni or Planning and Monitoring Board (PMB) /Senate/Board of Governors, University Grants Commission (UGC)/All India Council for Technical Education (AICTE) etc.
- The idea of proposed program is discussed in the Department Head's meeting and if found appropriate, the Head of concerned department is asked to put up a proper proposal. A sub-committee of internal/external member(s) may sometimes be formed for making the feasibility and viability analysis.

- The Departmental Academic Affairs Committee (DAAC) (on the basis of recommendations of sub-committee, wherever required) does the need analysis and prepares the proposal for approval from BOS.
- The Board of Studies (BOS) after deliberating on the proposal may make the desired modifications and then send the proposal to DOAA for consideration in Senate Undergraduate Committee (SUGC), along with the duly filled checklists.
- The proposal is put up for consideration to SUGC and upon its approval the recommendations may be sent to the Senate and PMB.
- After the Senate approval, the proposal may be sent to concerned Department/School through academic section for allocation of appropriate course codes OR if required it is sent to AICTE/UGC for approval and the status is put up in the forthcoming meeting of BOG.
- In case AICTE/UGC approves the proposal, it is implemented by the concerned Department/School after allocation of proper course code by the academic section.

The Program Educational Objectives are established on the basis of feedback taken from various stakeholders including the faculty of the program. On the basis of feedback from various sources, the Program Educational Objectives are reviewed at least once every accreditation cycle to ensure continuing suitability, adequacy and effectiveness in satisfying the requirements and the mission and quality policy of the University. The review includes assessing opportunities for improvement and the need for change of Program Educational Objectives. Reviews are carried out based on the inputs for the review period from the following sources:

- Action taken report on the previous reviews and accreditation reports (NBA-AICTE).
- Results of student's performance in various examinations.
- Result of Students Response Survey
- Feedback from Industry, Alumni, participating organizations in campus placement and other concerned sources
- Details of corrective/preventive actions
- Improvement programs suggested/recommended
- Training programs launched
- Review of mission and quality policy

The output from this review is in the form of an 'Action Plan', which includes actions to be taken, responsibility, target date, resource requirements etc. related to

- Improvement of the effectiveness of program and its processes
- Resources needed

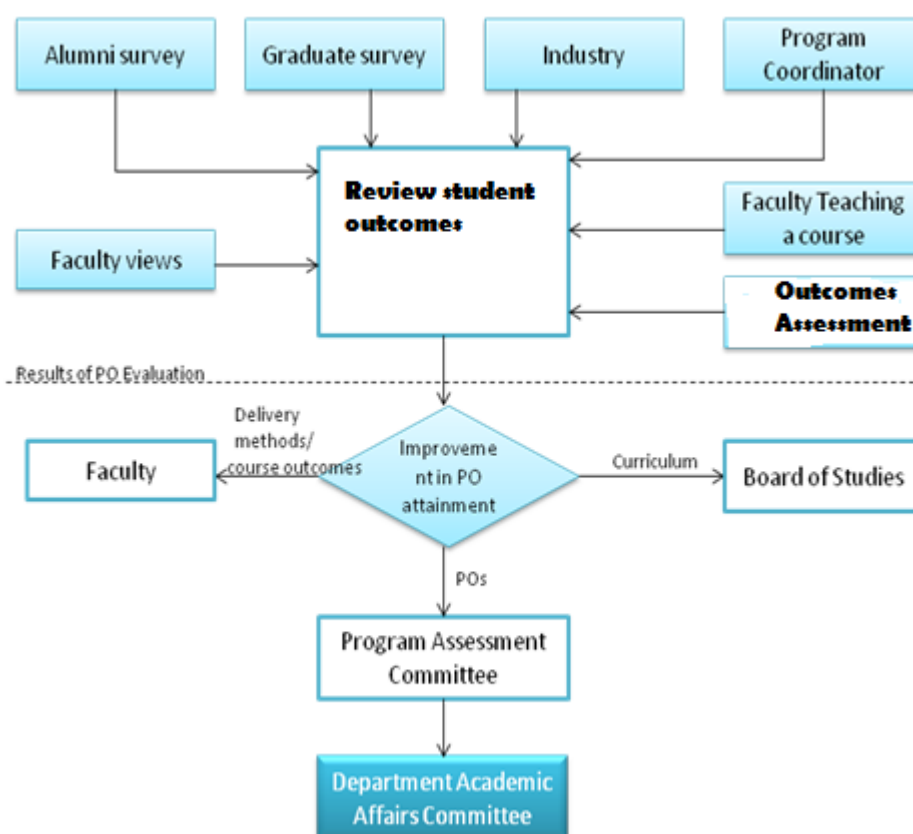
The most recent formal review was done in 2016. This has resulted in minor revision of program educational objectives and outcomes are met. The Institutional mission and quality policy was last published in 2015 after a comprehensive review of the previous mission statement published in the year 2007. This mission statement has remained the guiding spirit in writing this document. This document is reviewed formally in deans and heads meetings with the Director to check its continued suitability and effectiveness. The program educational objectives are also reviewed and discussed in the department faculty meetings at least once every year.

Figure below illustrates the process of revising/redefining existing student outcomes and the role of program faculty in implementing these. The need to revise / redefine of student outcomes is identified with the help of the assessment results of student outcome attainment from direct/indirect assessment methods.

The improvement of student outcomes attainment is considered in three possible phases: Curriculum, Delivery methods/course outcomes and program outcomes.

For curriculum, the program coordinator initiates the process with the views of Module coordinator. The department academic affairs committee notices the required changes and takes approval with BOS. The module coordinator initiates the process to change delivery methods/course outcomes in course assessment and discuss with program assessment committee

To improve the program performance, the Program Coordinator analyze the student outcome assessment and attainment and discuss the necessary revise changes in existing Pos with program assessment committee/department academic affairs committee.



### Process for Revising/Redefining Student Outcomes and the role of faculty

1.5 Any new Department/Centre introduced during the year. If yes, give details.

Venture Lab has been established to promote entrepreneurial activities in Thapar Institute of Engineering and Technology (TIET) with a mission "To nucleate entrepreneurial spirit and nurture

startups thereby making TU the most entrepreneurial university of India”. Venture Lab is working in association with Science & Tech. Entrepreneurship Park (STEP) and Entrepreneurship Development Cell (ED Cell) of Thapar Institute of Engineering and Technology (TIET) . In February 2017, Dr. Karminder Singh Ghuman has appointed as Coordinator and Dr. MD Singh as co-coordinator of Venture Lab and STEP. Presently there are two Design Labs having 5 high performance workstations and 6 (six) 3-D printers for rapid prototyping to name a few facilities developed in last year. One Laser cutter and one complete electronic workbench have already been in the process of procurement.

Venture Lab is very dynamic in student community, as it organized a very successful “Venture Lab weekend” program moderated by Mr. Neil Sheridan UK in November 2016, followed by Startup Expo and Young Entrepreneur’s Summit (YES) in Jan-Feb 2017. It also provided seed money to budding entrepreneurs and other types of supports to nurture their startups.

Venture Lab also provided a golden opportunity to its students, by providing an incubation space and other logistic support in addition to mentoring and technical guidance. Presently there are 10 startups working with Venture Lab. Venture Lab also applied for Government funding under Atal Innovation Mission in August 2017. Recently Venture Lab has developed an eco system in collaboration with Punjab Angel Networks, TiE, National Small Scale Industries Corporation, SAAC, 91-Springboard etc.

## **1.6 Programs Conducted During the Academic Year July 2016- June 2017**

### **ACADEMIC PROGRAMMES**

The University as of date offers 15 undergraduate programs, 4 International Engineering credit transfer programs, 5 integrated programs and 29 post graduate programs besides the doctoral program in each discipline.

#### **Undergraduate**

- Biotechnology
- Chemical engineering
- Civil engineering
- Computer engineering
- Electrical engineering
- Electronics (instrumentation & control) engineering
- Electronics & communication engineering
- Electronics and computer engineering
- Mechanical engineering
- Mechanical engineering (production)
- Mechatronics
- Software engineering

### **Integrated Programs**

- Civil Engineering - MBA
- Computer Engineering - MBA
- Electrical Engineering - MBA
- Electronics & Communication Engineering - MBA
- Mechanical Engineering - MBA

### **Postgraduate**

- |  |   |
|--|---|
| – CAD/CAM Engineering                  | – Information Security                  |
| – Structural Engineering               | – Biotechnology                         |
| – Civil Infrastructure Engineering     | – Metallurgical & Materials Engineering |
| – Electronics & Communication          | – Environmental Science & Technology    |
| – Wireless Communications              | – Energy Technology and Management      |
| – Production Engineering               | – VLSI Design                           |
| – Software Engineering                 | – Chemical Engineering                  |
| – Electronic Instrumentation & Control | – M.Sc. (Biotechnology)                 |
| – Computer Science & Engineering       | – M.Sc. (Chemistry)                     |
| – Power Systems                        | – M.Sc. (Mathematics and Computing)     |
| – Thermal Engineering                  | – M.Sc. (Physics)                       |
| – Computer Applications                | – M.Sc. (Microbiology)                  |
| – Power Electronics and Drives         | – M.Sc. (Environmental Science)         |
| – Master of Business Administration    | – MA- Economics                         |
|  | – MA- Psychology                        |

### **PhD in all disciplines**

## Criterion – II

### 2. Teaching, Learning and Evaluation

#### 2.1 Total No. of permanent faculty:

	<b>Prof.</b>	<b>Assoc. Prof.</b>	<b>Asstt. Prof.</b>
Dept. of Biotechnology	5	3	4
Dept. of Civil Engineering	3	6	9
Dept. of Chemical Engineering	3	3	10
Dept. of Computer Sc. and Engineering	4	7	35
Dept. of Electronics and Communication Engineering	4	4	29
Dept. of Electrical and Instrumentation Engineering	2	6	25
Dept. of Mechanical Engineering	2	10	30
School of Chemistry and Biochemistry	3	7	4
School of Mathematics	1	6	13
School of Humanities and Social Sciences	2	0	8
School of Physics and Materials Science	4	8	4
School of Energy and Environment	2	2	3
LMTSoM	0	3	13

Total	Asst. Professors	Associate Professors	Professors	Others (Visiting Professors & Lecturer)
387	187	65	35	89

#### 2.2 No. of permanent faculty with Ph.D.

274
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### 2.3 No. of Faculty Positions Recruited (R) and Vacant (V) during the year

Asst. Professors		Associate Professors		Professors		Others		Total	
R	V	R	V	R	V	R	V	R	V
42+8		1		2 (visiting prof.)		12 +36 (visiting Asstt. Prof+ Lecturer (cont.)		100	

### 2.4 No. of Guest and Visiting faculty and Temporary faculty

89		
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### 2.5 Faculty participation in conferences and symposia:

No. of Faculty	International level	National level	State level
Attended Seminars/ Workshops	28	60	56
Presented papers	31	58	35
Resource Persons	15	63	81

### 2.6 Innovative processes adopted by the institution in Teaching and Learning:

Thapar University has setup a Centre for Academic Practices and e-learning (CAPSL) with an overarching aim to enable the shift to a new paradigm of teaching and learning. The new paradigm requires TU faculty to move from Teacher Centred Learning to Student Centred Learning, including alignment of understanding of the shift of both staff and students. The other objectives of the program are Continuous Professional Development (CPD) in academic practice and how this is related to the concept of growth as a teacher; Reflection on teaching and learning; and relationship to and importance of Scholarship of Learning and Teaching.

The program aims to embed and disseminate skills and pedagogies to support the teaching and learning culture at Thapar University, such as group work, active learning and reflective practice and evaluation.

100 faculty members completed five core workshops during 2016 namely (i) Student-Centred Learning (ii) Assessment (iii) Curriculum (iv) Outcomes Based Approach to Student Learning and (v) Sharing scholarship in teaching and learning. Each participant also completed at least two optional workshops during the course.

The participants were assessed by TCD on the basis of an assignment that integrates learning from all 5 workshops with the practical dissemination. The assignments were submitted individually by each participant online. Comprehensive feedback on submissions and the presentation was provided to participants and each participant was graded as Distinction or Satisfactory or Resubmit.

A showcase culmination event was held on January 11, 2017 and the top leadership team from both institutions was invited to participate. The participants made a group poster presentation in groups of 5 each. The poster ‘competition’ provided an excellent platform to participants to receive recognition of their work, to have to answer questions on it and engage in dialogue about it. It was a vibrant and positive process. This was followed by five brief presentations on pedagogical changes implemented by each group in their classes and a panel discussion. The successful participants were awarded certificates with a special recognition to 25 participants, who earned a distinction.

Successful completion of the ‘New Directions’ Programme is the pre-requisite for enrolment in the planned Special Purpose Certificate in Academic Practice (SPCert) to be established jointly by Trinity Teaching & Learning with Thapar University.

	
<p align="center"><b>Foundation Program in Teaching &amp; Learning</b></p>	<p align="center"><b>Foundation Program in Teaching &amp; Learning</b></p>



	
<b>Showcase Event</b>	<b>Showcase Event</b>

2.7 Total No. of actual teaching days during this academic year

180

2.8 Examination/ Evaluation Reforms initiated by the Institution (for example: Open Book Examination, Bar Coding, Double Valuation, Photocopy, Online Multiple Choice Questions)

All in practice

2.9 No. of faculty members involved in curriculum Restructuring/revision/syllabus development as member of Board of Study/Faculty/Curriculum Development workshop

95

2.10 Average percentage of attendance of students

75% min

2.11 Course/Programme wise distribution of pass percentage:

Title of the program	Total No. of Students appeared	CGPA $\geq 8.5$	CGPA $\geq 6.0$ & $< 8.5$	CGPA $< 6.0$
2016 UG	1596	439	913	244
2016 PG	597	142	408	47
2015 UG	1553	436	950	167
2015 PG	690	192	465	33
2014 UG	1286	266	869	151
2014 PG	695	172	512	11
2013 UG	969	189	629	151
2013 PG	617	157	423	37

2.12 How does IQAC Contribute/Monitor/Evaluate the Teaching & Learning processes:

The University has established, documented and implemented a Quality Management System. Continuous improvement in the implementation and effectiveness of the quality management system is

ensured through continuous reviews and internal audits. The University has identified the processes needed for the quality management system and their application throughout the organization process are being carried out in the University. Documented procedures have been developed for the management activities, provision of resources, instructional design, delivery and control and measurement.

## PROCEDURE FOR MEASURING ATTAINMENT OF COURSE LEARNING OUTCOMES – DIRECT MEASURES

The assessment process used to measure attainment of CLO's is described as under:

The assessment process uses both direct and indirect measures to measure the attainment of each outcome. The examples of such measures are given below:

### Direct Measures

- Student Assignments
- Projects
- Examinations

### In-direct measures

- CLO Surveys

To assess each course, we use CLO's defined for that course. For example in Course A, we defined four CLO's (LO1 to LO4) that need to be met to successfully achieve that outcome at a minimum target performance level for a course. In each course, we assess the level of achievement of each course outcome. The data are then combined to analyze and evaluate the program level achievement of each program outcome. If any student outcomes are not met, action is taken for improvement.

In the section below, the assessment of course A using CLO 1 is explained as an example. For example, at the course level, CLO1 reads

- *CLO1: Applying scientific and/or engineering principles towards solving engineering problems.*

### CLO Attainment Assessment Process

The step by step process for assessing CLO's is tabulated below.

#### Step-by-step process for assessing Student Outcomes

**Step 1:** The Program coordinator analyses each course by breaking down into course learning outcomes and weightage and rating scale has been defined for each course. In addition, well designed surveys were used to assess each outcome.

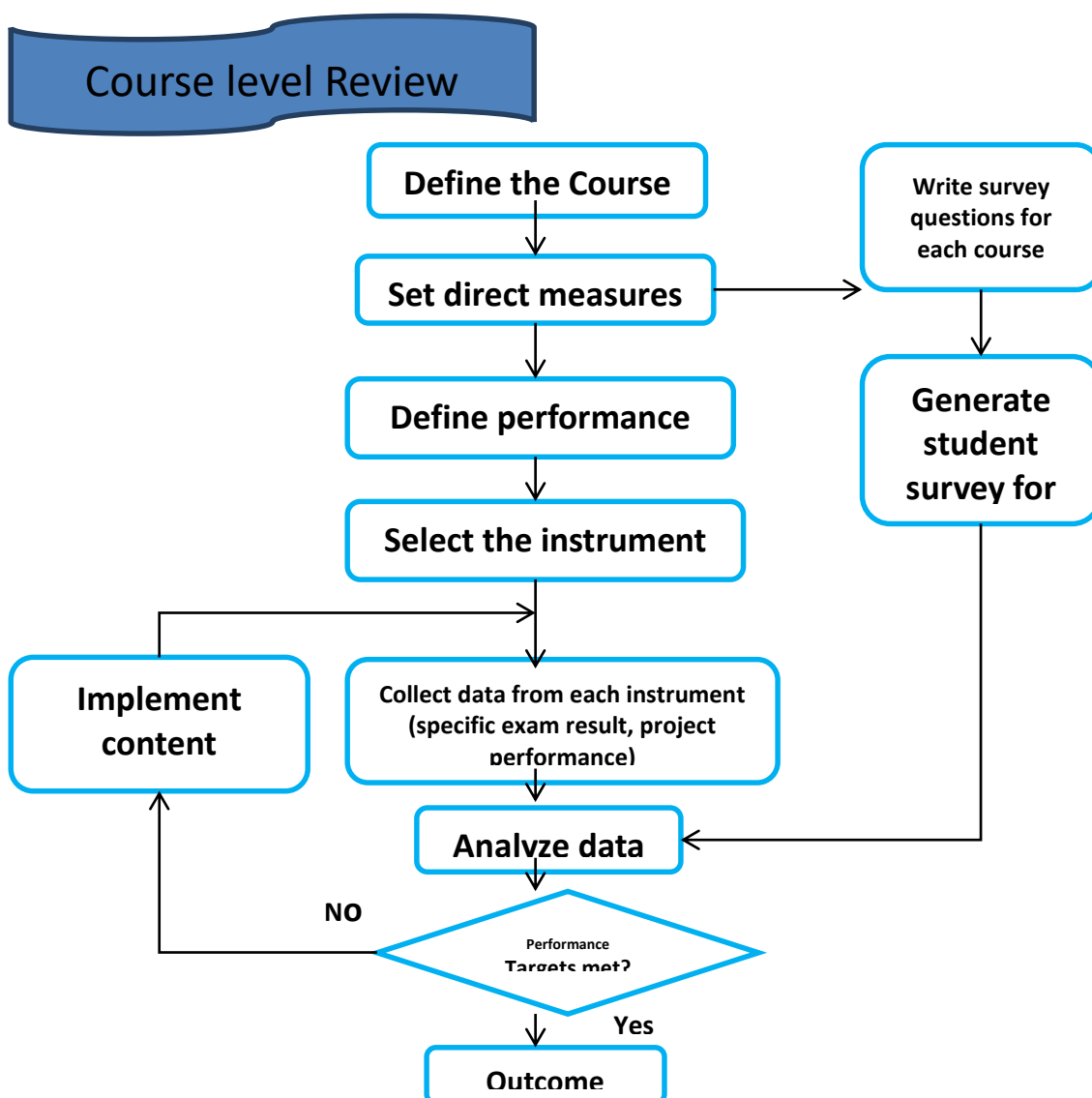
**Step 2:** For each outcome define performance indicators (Assessment criteria) and their targets.

**Step 3:** The module coordinators collect the qualitative and quantitative data and is used for outcome assessment in a continual process.

**Step 4:** The Program Assessment Committee analyzes the collected data. If the assessed data meets the targeted performance value specified in step 2, the outcome is attained.

**Step 5:** The Department Academic Affairs Committee recommends content delivery methods/course outcomes/ curriculum improvements as needed. In case the targeted performance for some outcome is not met, a corrective action plan is put in place which serves as a feedback to the process for continuous improvement.

The procedure followed at the course level is depicted in Figure 1 below:



**Figure 1: Assessment of attainment of CLO's for a course**

### Assignment/Examination level

Throughout the semester, the course instructor uses specific questions in tutorial or assignments, laboratories or examinations directly related to course outcomes. For example: in case of **Computer Aided Design** questions specifically targeting CLO1 were asked in end semester examination (EST). The student performance in this question is then summarized. At the end of semester, the course instructor looks at the overall performance of each student across all instruments used for evaluating each performance criterion.

#### 2.13 Initiatives undertaken towards faculty development

<i>Faculty / Staff Development Programmes</i>	<i>Number of faculty benefitted</i>
Refresher courses	26
Faculty Improvement Programme (By NITTR)	2
Orientation programmes	35
Faculty exchange programme	25
Staff training conducted by the university	56

#### 2.14 Details of Administrative and Technical staff

Category	Number of Employees	Number of Vacant Positions	Number of permanent positions filled during the Year
Administrative Staff	325	03	9
Technical Staff	170	02	03

### Criterion – III

#### 3. Research, Consultancy and Extension

##### 3.1 Initiatives of the IQAC in Sensitizing/Promoting Research Climate in the institution

The CONTEMPORIZATION PROGRAM is envisaged to deliver a research inspired; outcome based educational experience to the students. The partnership covers all the major academic and research activities of the University and will help address and bolster Thapar Institute of Engineering and Technology University's position as a leading centre for higher education in India and in the region. As a first step, we invited Trinity in November 2014 to conduct an academic review of our programs and governance procedures. The findings of the review set out a path to achieve a closing of the performance gap. An overall plan for change was then prepared for implementing the findings of the academic review. As a first step the harmonization of curriculum with Trinity was taken up to bring it up to date with global standards. We have adopted the learning outcomes approach for teaching with greater reliance on self-directed learning, projects and research-led teaching.

To give a major fillip to research, we have sponsored two research professorships at Trinity. The Professors would spend time both at Thapar and Trinity and would lead a major research effort which will culminate into setting up of a State of the Art research centre at Thapar in the next five years.

As part of the contemporisation program, we are also setting up a Centre for Academic Practice and Student Learning under mentorship of Trinity to support and help the faculty hone their skills and teaching pedagogy. This centre will support a whole-institutional approach to teaching and learning and facilitate a broad adoption of this new learning paradigm. The training and on-going professional development will be instrumental in establishing the culture necessary for this initiative to grow and contribute meaningfully to the contemporisation programme.

We have envisioned improving the laboratory and physical infrastructure on the campus. A modernization plan for the important teaching and research laboratories in consultation with Trinity has been developed. We have hired world class foreign architects to develop key academic infrastructure that would include new Computer Science block, Library, Lecture hall complex, student residences and other academic blocks. Face lifting and modernization of older buildings has also been planned in a major way. Thapar Institute of Engineering and Technology University has also planned to implement an international ERP system to manage and govern the academic, financial and administrative functions.

We have undertaken major examination reforms during the year. In the new procedure, the question papers are now being reviewed by Trinity. The examination results will be discussed by an Examination Board which will be convened to review sample answer scripts, projects and the marks obtained by the students.

The partnership is now being expanded to collaborate in other areas of academia and research which includes the programs offered by TIET Schools of Mathematics, Physics, Chemistry and the postgraduate and PhD programs. Additional academic areas in Arts, Humanities and Social Sciences are also being scoped.

An Innovation Centre/Venture Lab would be set up at TIET to run accelerator program open to teams of students with an early-stage business idea. The program will support students in developing investor-ready ventures.

Thapar Institute of Engineering and Technology University constituted the “Senate Research Committee” to discuss all the matters pertaining to policies of Ph.D. programmes and other research parameters like consultancy, testing and IPR cell.

For each Ph.D. student a specific doctoral committee is there consisting of supervisors, members from the cognate area from the candidate’s department and outside the department & chaired by the respective head of the department/school. The doctoral committee monitors the progress of the candidate from time to time and specifically once in every semester through a formal presentation of work done during previous six months. The Dean, R&SP communicates to all departments/schools for research facilities and funding available by various sponsoring agencies from time to time. The progress record of research projects is maintained by the DoRSP office.

The Doctoral Committee constitutes of Head of Department/Schools as Chairperson, Supervisor (s) and two other Senior Faculty in the area of expertise as members. Each candidate has to make power point presentation of the progress before the Doctoral Committee and presentations are organized by the office of Dean (Research & Sponsored projects).

Regarding monitoring of research projects, a statutory body of the University i.e., Planning and Monitoring Board under the Chairmanship of the Director and other senior faculty being its members monitor progress of each project, the minutes of which are circulated. The meeting of Planning and Monitoring Board are held at regular intervals at least twice in a year.

Dean, R&SP convenes the meeting of all Heads of Departments/Schools in every semester to decide on the admissions to Ph.D. programme of the University.

The university proactively promotes participation of all faculty members as Principal Investigator for various sponsored projects/schemes and provides all the necessary and provides all the necessary support and basic facilities as well as to advance the funds as support to ensure smooth completion of the projects.

There are several joint research activities like Ph.D. supervision between various departments. There has been lot of synergy between some departments such as Mechanical Engineering with Chemical and Civil Engineering, Chemical Engineering and Biotechnology, Civil and Environmental Engineering, Computer Science and Mathematics, Behavioural Sciences with Management, Industrial Engineering with Management and many others. Many sponsored research projects are being guided jointly by faculty of two different departments.

MOU's with other Institutions are also operational which facilitate joint research activity. Many faculty members from different IIT's are acting as supervisors of the PhD students registered at Thapar Institute of Engineering and Technology University.

The details of such joint collaborative projects and joint PhD supervision are placed with Departmental/School's profile submitted separately.

### 3.2 Details regarding major projects (from agencies other than Thapar Institute of Engineering and Technology University)

	Completed	Ongoing	Sanctioned	Submitted
Number	38	109	27	---
Outlay in Rs. Lakhs	656.14 lakhs	3276.38 lakhs	658.56 lakhs	

### 3.3 Details regarding minor projects

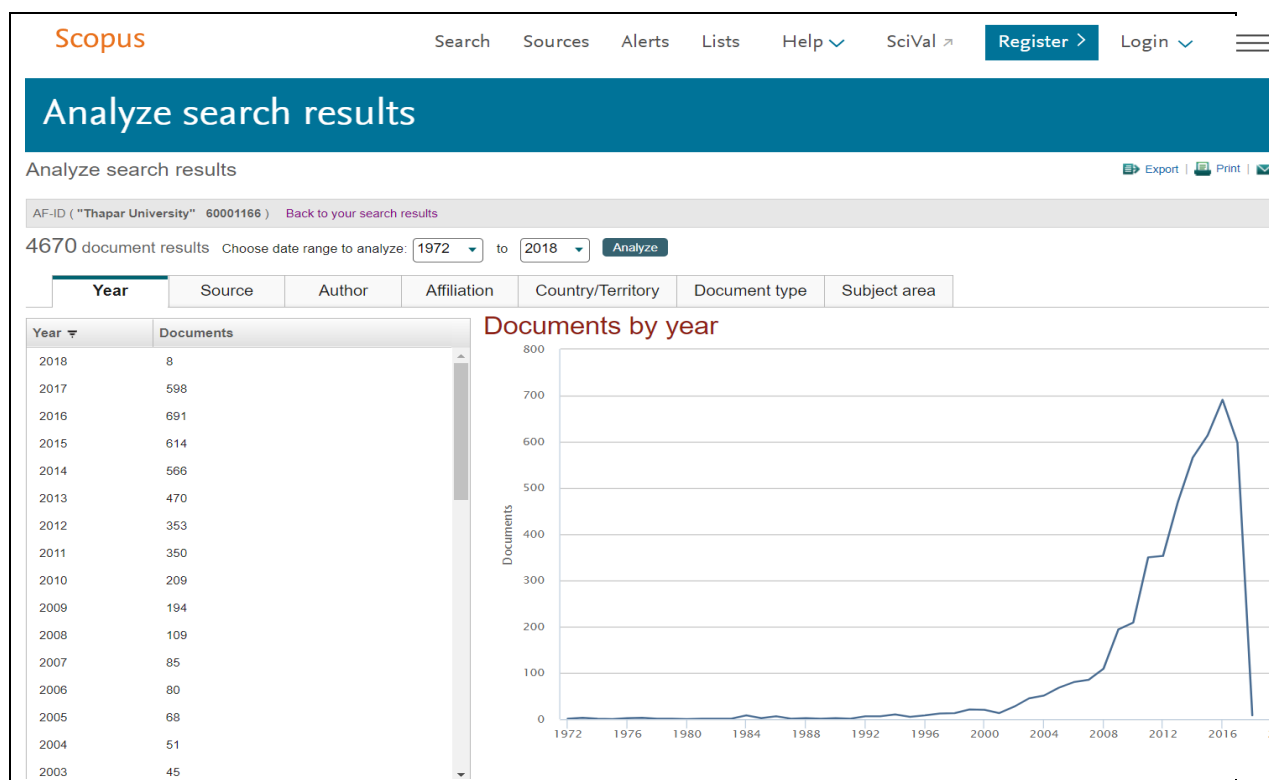
	Completed	Ongoing	Sanctioned	Submitted
Number	--	--	--	--
Outlay in Rs. Lakhs	--	--	--	--

### 3.4 Details on research publications

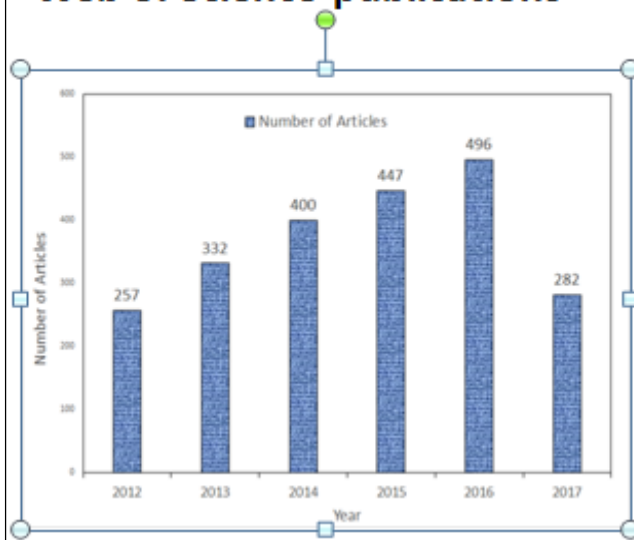
	International	National	Others
Peer Review Journals (Scopus)	691		
Non-Peer Review Journals	189		
e-Journals	All published papers are available online.		
Conference proceedings	179	65	

### 3.5 Details on Impact factor of publications:

Range  Average  h-index   
 Nos. in SCOPUS



## Web of Science publications



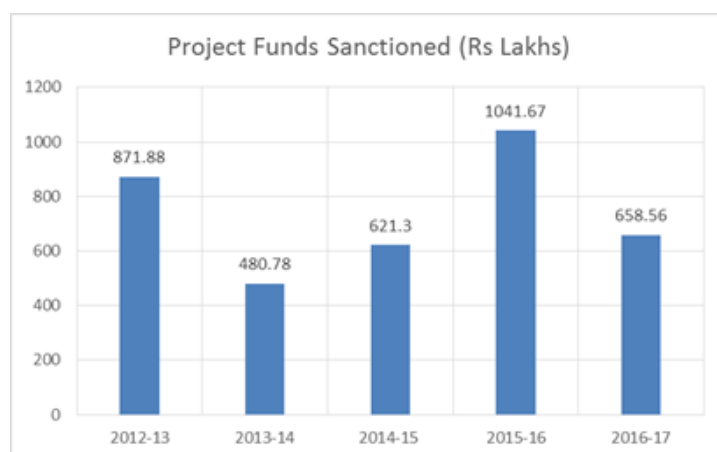
## Metrics and Citation Impact

Parameters	Figure
Total Articles Indexed in WoS	2214
Sum of the Times Cited	9153
Sum of Times Cited without self-citations	6828
Citing Articles	6651
Citing Articles without self-citations	5702
Average Citations per Item	4.13
h-index	31



3.6 Research funds sanctioned and received from various funding agencies, industry and other organisations.

Nature of the Project	Duration Year	Name of the funding Agency	Total grant sanctioned	Projects Received
Major projects	2016-17	CSIR, DBT, DRDO, DST, UGC, etc	Rs. 658.56 lakhs	27
Minor Projects	2016-17		nil	nil
Interdisciplinary Projects	2016-17	--	--	---
Industry sponsored	2016-17	Industries	Rs. 197.13 Lakhs	68
Projects sponsored by the University/ College	2016-17	Thapar Institute of Engineering and Technology University	Rs. 50 Lakhs	11
Students research projects (other than compulsory by the University)	2016-17	---		
Any other(Specify)	2016-17	---		
Total			905.69 Lakhs	106



3.7 No. of books published i) With ISBN No.  Chapters in Edited Books   
(7-current data)

ii) Without ISBN No.

3.8 No. of University Departments receiving funds from

UGC-SAP	<input type="text"/>	CSIR	<input type="text" value="11"/>	DST	<input type="text" value="32"/>
DAE	<input type="text" value="3"/>			DBT Scheme/funds	<input type="text"/>

3.9 For colleges      Autonomy      CPE      DBT Star Scheme

INSPIRE  CE  Any Other (specify)

3.10 Revenue generated through consultancy

3.11 No. of conferences organized by the Institution

Level	International	National	State	University	College
Number	1	2			
Sponsoring agencies	AICTE, DST, TEQIP-II, UGC				

3.12 No. of faculty served as experts, chairpersons or resource persons

3.13 No. of collaborations International  National  Any other

3.14 No. of linkages created during this year

3.15 Total budget for research for current year in lakhs:

From funding agency  From Management of University/College

Total

3.16 No. of patents received this year

Type of Patent		Number
National	Applied	5
	Granted	Nil
International	Applied	Nil
	Granted	Nil
Commercialised	Applied	Nil
	Granted	Nil

3.17 No. of research awards/ recognitions received by faculty and research fellows of the institute in the year

Total	International	National	State	University	Dist	College
75	20	3	2	50	----	----

3.18 No. of faculty from the Institution who are Ph. D. Guides and students registered under them

3.19 No. of Ph.D. awarded by faculty from the Institution

3.20 No. of Research scholars receiving the Fellowships (Newly enrolled + existing ones):

JRF  SRF  Project Fellows  Any other: TA

3.21 No. of students Participated in NSS events:

University level  State level   
National level International level

3.22 No. of students participated in NCC events: **Nil**

University level  State level   
National level International level

3.23 No. of Awards won in NSS: **Nil**

University level  State level   
National level  International level

3.24 No. of Awards won in NCC: **Nil**

University level  State level   
National level International level

3.25 No. of Extension activities organized

University forum  College forum   
NCC  NSS  Any other

3.26 Major Activities during the year in the sphere of extension activities and Institutional Social Responsibility

#### SATURNALIA

It is the annual festival of Thapar Institute of Engineering and Technology (TIET) . All the students were introduced to Saturnalia the techno cultural fest. It was an amazing evening which generated keen interest among the students for Saturnalia, especially with the young freshmen students, who were going to be a part of such a mega event for the first time. Students from colleges of NCR, Tricity and Punjab actively participated in the fest. Grand Pre-Sat events PATIALA MARATHON and CHAKDE NIGHT

were organized. Chakde Night, organised on 29th September, was planned as a promotional event for Nikka Zaildar, and included performances of various Punjabi Stars like Ammy Virk, Sonam Bajwa, Dilpreet Dhillon etc. Various informative cultural & technical workshops were organised for the students. PLC-Scada, Ethical Hacking, Arduino Workshop were some of the major workshops that attracted mass participation from students, rendering lots of knowledge and information to them. As with all the fests, the main attraction of Saturnalia'17 was the Star Nights.

#### URJA

URJA, the third edition of the national level sports festival of Thapar Institute of Engineering and Technology (TIET) in which more than 20 institutes from all over the country participated, was held from 17th 19th February 2017. The fest comprised of a plethora of events from Stunt Shows and Live Streaming of Matches to various sports events like Athletics, Cricket, Football, Volleyball, Basketball, Badminton, Lawn Tennis, Table Tennis, Chess and Marathon races. Some of the prominent participants included teams from Punjab Engineering College, Chandigarh; Chitkara University, Baddi and Rajpura; NIT, Kurukshetra ; NIT, Jalandhar; University College of Engineering (UCOE), Punjabi University, Patiala; Maharshi Dayanand University, Rohtak; Maharshi Markandeshwar University, Mullana; LPU, Jalandhar; NSIT, Delhi; SLIET, Longowal; ITM, Gurgaon; ACIET, Amritsar; IMS, Ghaziabad. The following sports are considered under the main Sports events: Athletics, Badminton, Basketball, Chess, Football, Lawn Tennis, Table Tennis, and Volleyball.

#### ADVENTURE CLUB

In an effort to introduce new students to the activities of the club, a trip to Hatu Peak was organized. As part of the Adventure Club's initiative to provide a platform for people to grow and enrich their life experiences through adventure trips, a 3 day, 2 nights trip was organised to Jim Corbett National Park, Uttarakhand. The students of Thapar Institute of Engineering and Technology (TIET) represented their state and college at National level Skiing competition. The Adventure Club organised a 2-day River Rafting trip in Rishikesh. Faculty members accompanied the students on the trip. In this new academic section Adventure Club, Thapar Institute of Engineering and Technology (TIET) seized the attention of the students by conducting its first event of Bir-Biling, Kangra (H.P) trip.

#### AMERICAN INSTITUTE OF CHEMICAL ENGINEERS STUDENT CHAPTER (AICHE)

Many new talented students with innovative ideas joined the prestigious student chapter. AICHE organized the fun-filled "technical" event- "Chemopoly". The students of all branches actively participated in this game which motivated the team to hold the event suitable for students of all branches. AICHE's annual Chem-e-Car competition engages college students in designing and constructing a car powered by a chemical energy source that will safely carry a specified load over a given distance.

#### LITERARY SOCIETY

Literary Society is dedicated to providing a platform for literary expression and creativity to the students of Thapar Institute of Engineering and Technology (TIET) . The first edition of Thapar Institute of Engineering and Technology (TIET) 's inter-college literary fest Eclectiza 2017 was organised on the 6th of February for a 3-day literary extravaganza, where literary enthusiasts from across North and Central India came down to Thapar Institute of Engineering and Technology (TIET) for the events. Eclectiza 2016, the inaugural edition of Thapar Institute of Engineering and Technology (TIET) 's

annual literary fest aimed at taking the literary society, its events and the students of Thapar Institute of Engineering and Technology (TIET) outside the walls of the university, to compete with the best colleges in the country. Other events organized by the society were: Elixir 2016, Acumen 2016, Debating Events: Freshman, Sophomore, and Challenger's Debate, Open Mike, and Many more Workshops.

#### INSTITUTION OF ENGINEERS (INDIA) THAPAR CHAPTER

The year 2016 at IEI (Institution of Engineers), started off with a lot of events and activities for the students of Thapar Institute of Engineering and Technology (TIET) . The first one being Society Fair held on August 16, 2016. Other activities of the chapter included EXPERT TALKs, CRASH COURSE 2.0, Technotron 3.0, PROJECT SHOWCASE, RESUMÉ BUILDING, APP DEVELOPMENT WORKSHOP, ETHICAL HACKING WORKSHOP.

#### CREATIVE COMPUTING SOCIETY 2016-2017

The society conducted many events including ORIENTATION, BYLD - Crash Course 2.0, HACK for INDIA - HACKATHON, CHAKRAVYUH, and Switch Coding.

#### ECON CLUB (ECONOMICS CLUB THAPAR INSTITUTE OF ENGINEERING AND TECHNOLOGY (TIET) )

The first major event of the semester was the WOLF OF DALAL STREET which was one of the best events of THAPAR INSTITUTE OF ENGINEERING AND TECHNOLOGY (TIET) of the year 2016. The major parts of this event were Mock IPL auction. Other major events organized by the society were: Policy Bazaar 1.0, GST AWARENESS WEEK. The club stood 3rd in Mock IPO, a flagship and international event with teams from Nepal, Thailand and Indonesia in attendance.

#### ENACTUS

Enactus is a global, non-profit organization dedicated towards making a positive impact on the lives of people all across the globe. The society held many events including NARITVA to bring the consumer product gap by facilitating school girls and women in rural areas with easy access to low cost sanitary pads without having to face embarrassment; AASHAYEIN to impart professional stitching skills to ladies and make them self-dependent; E-SAHAYAK to help a village become technologically advanced, and PAINTING COMPETITION.

#### THAPAR MOVIE CLUB

Thapar movie club or TMC consists of a bunch of movie enthusiasts whose sole aim is appreciation and promotion of good cinema. The club organized a number of events including BOLLYWOOD KA TADKA, CINEYOUTH FILM FESTIVAL 2017, Eclectiza, Izhaar, NOX-Night, Nukkad Natak by KalamSociety and Theatre Play by Sheher, a comedy show by Sahil Shah, Bollywood Quiz, few plays Anton Chekhov - The Drowning Man, Death of a Clerk, The Bank Manager.

#### IETE SOCIETY

IETE student's forum organised many events during the academic year. Some of the major events were: ARITHMANIA, The Arduino quiz, a workshop on "Arduino Micro-controller", Soldering Workshop, Android App Development, Bluetooth and Ultrasonic Controlled robots. They also organized

ELEMENTOS, a week-long fest organized by IETE students' forum, which gave a chance to showcase technical skills by participating in "LINE SEGUIDOR" and RESISTO.

#### FROSH WEEK

FROSH WEEK comprises of various activities and events for the fresher class of Thapar Institute of Engineering and Technology (TIET) to ease them into their new surroundings. This year Frosh week succeeded with a lot of new and innovative events, such as: Proem Week, Sports-mania, Society fair, Frosh Eve, Games of Frosh, Foodies, Hunger games, Seniors VS Juniors, Karaoke Night, Black Theatre, La-caminar, Patiala City Tour.

#### GENE SOCIETY

GENE society organized many events this academic year including an industrial, Quiz and movie showcase, A technical quiz competition, Technical event 'OPERON', and a panel discussion on 'synergy between academics and industry for biotech professionals.

#### IICHE SOCIETY

In this academic year IICHE society was quite active and managed to conduct numerous events. The major events were: Treasure Hunt, Knowledge Masters, Industrial Auction 1.0, Industry trip, Mock Gate, 3 day long festival Alchemy which included Sherlo-CH, Separation Yantra, and Industrial Auction 2.0.

#### MUSIC AND DRAMATIC SOCIETY

The society successfully organized various events including Mudra Nite 2016 where students enjoyed Music, Dance, Fashion show, Skit; IZHAAR, SARGAM NITE 1.0.

#### LEAD SOCIETY

The society organised four events in the session 2016-2017 which included: Lecture on Food and Brain, Lecture on IAS-Preparation and Exams by Anurag Bachan, Quiz -Entertainment by LEAD Society group members, Industrial Visit to Ganpati Cements-Kathua.

#### THAPAR MATHEMATICAL SOCIETY

The society organized a number of events including Shoonya 2k17 which included a lecture on 'Vedic maths is logic not magic', Cryptography, Rubik's cube competition, Math-mania, Cryptics and showcasing of the movie 'The Man who knew Infinity'-a movie on the life of Dr. S. Ramanujan.

#### MICROSOFT STUDENT CHAPTER

A series of events were conducted by Microsoft Student Chapter, TU under the fest name "INSPIRUS 2K17" the events included Promotion of INSPIRUS, WORKSHOP for preparing MBA ,GRE, GATE ,IAS; Knockout, Anime and TV quiz, Treasure Hunt.

#### THAPAR MUN SOCIETY

The year started with the successful organization of Thapar Intra MUN. Some of the major interactions of the with other MUNs were Delhi International MUN 2016, ISBF MUN 2016, Ignite MUN 2017, Jesus and Mary College MUN 2017, Amity International MUN 2017, PEC MUN 2017, SD MUN 2017, Credence MUN 2017.

#### NOX SOCIETY

As part of the western dance society of Thapar Institute of Engineering and Technology (TIET) , NOXians organised a 2-week dance workshop conducted by the renowned choreographer, Ankit Sati in August 2016. They further participated in Western Dance competition in PEC fest 2016, organised by PEC University in October 2016. NOX Night was organised in University Open Air Theatre in February 2017 with some amazing dance performances both group and solo for Thapar Audience.

#### OWASP Thapar Student Chapter

The chapter organized 2 major workshops in the academic year; one was on Python and on Open CV. They also organized two Competitions ‘Capture the Flag’ and Hackerrank Coding Competition.

#### PARYAVARAN WELFARE SOCIETY

Like all previous years many events were organized by the society. Some of the major events were Solid Waste Management Exhibition (under Swachh Bharat Abhiyaan), Graffiti wall painting under Swachh Bharat Abhiyaan, Tree Plantation drives, Earth Day Celebrations with invitation to different schools, Tree Naming Programme, Save animal campaign (Through painting on trees), Vehicular Pollution check campaign, Nature Conservation Day Celebrations. Society received many accolades for its work, which includes Award of honour under Green Punjab Mission, Award of Honour by Municipal Corporation, Patiala.

#### PRATIGYA SOCIETY

The society is engaged in upliftment of socially backward class of the society. In order to enhance creativity and unleash the hidden potential in the students, Pratigya Welfare Society created a platform to showcase their talent by organizing two competitions Drawing and Rangoli Making. Society organized a movie show ‘BAJRANGI BHAIIJAAN’ for its students in Auditorium. Annual cultural fest of Pratigya UDAAN 2k17 was organized. Children participated in dance, singing, fancy dress, bhangra, skit, nautanki, anchoring, etc according to their talent & interest. Society also organized sports day for these children.

#### MECHATRONICS AND ROBOTICS SOCIETY

The society organized few workshops including Arduino basics, LEGO KIT WORKSHOP, SOLID WORKS WORKSHOP.

#### SOCIETY OF MECHANICAL AND INDUSTRIAL ENGINEERS (SOMIE)

The society organized many events including ‘visual logo-quiz’, Infinity-a General Engineering Quiz, SOLIDWORKS WORKSHOP -2016.

#### ACE- INTER YEAR SPORTS LEAGUE (SPADES)

The “Sports and Anti-Addiction Educating Society” organized the inter year sports league popularly known as ACE.

#### SPICMACAY, THAPAR INSTITUTE OF ENGINEERING AND TECHNOLOGY (TIET) CHAPTER

Based on the belief of preserving the culture, integrity and the Indian heritage amongst youth, SPICMACAY Thapar Institute of Engineering and Technology (TIET) chapter witnessed many events spread across the year, with Thapar Institute of Engineering and Technology (TIET) personally pitching to the artists for the first time. SPICMACAY team organised the "SOCIETY CONVENTION", 'Sanskriti- Hindustan kipehchaan' by young sitar prodigy Rishabh Seen and the famous Langa group from Rajasthan followed by classical performances by school and college students. SPICMACAY had a collaborated event with Enactus TU -art showcase by handicapped children from 'School of deaf, Patiala'. In an attempt to promote the fundamental principle of SPICMACAY, the volunteers pitched schools throughout Patiala, Nabha and Karnal. These included DAV, YPS and the KV's. Another event 'Kathputli' - a puppet show was organized by the famous Alankar group.

#### TOASTMASTERS CLUB

Thapar Toastmasters Club organized a few events during the academic year. They included TOAST TUSSLE 2.0, Spell-Bee, Toast Talks 3.0, Cryptomania, Mutomania, and Twistomania.

#### VIRSA

VIRSA comprises of various activities and events related to the culture and heritage of Punjab for all the students of Thapar Institute of Engineering and Technology (TIET) to spread awareness about the beautiful Punjabi culture. A Punjabi movie 'Angrej' was showcased in the main Auditorium of the Thapar Institute of Engineering and Technology (TIET). Punjabi Literary Eve, Poetry Competition, Dandiyaan, Bhangra Wars, Jalwa-E-Virasat, Malwai Gidda, Punjabi Traditional Fair, Turban Tying Competition, Gatka Performance, Bhangra Performance, Gurupurab Celebrations.

#### YOUTH UNITED

The society organized many social events during the year including Cleanliness Drive, Pingalwada Visit, Joy of Giving Week, health camp, Food drive, SMILING FUTURE event including Painting & Drawing Event, music performance by Deaf and Blind School.

#### NATIONAL SERVICE SCHEME (NSS REPORT)

The university has 15 units of NSS. They are involved in many activities. The NSS organized many events including Blood Donation Camp, Road Safety, Road safety quiz, Special Camp for Blood donation, Eye sight check-up, different medical, Medical Checkup Camp, Social Service, Swachh Bharat, HEALTH AWARENESS CAMP, "BETI BACHAO BETI PADAU", Tree Plantation Drive, Moral Education Lecture to Schools students of village Behra, clothes distribution camp to needy people, medical camp for mess workers/ security guards/ gardeners/ drivers & other workers of LMTSOM, Training Session on importance of cleanliness and surroundings, environmental sanitation programme.

#### SPORTS ACTIVITIES

GAME	TEAM STRENGTH	COMPETITION	DATES	VENUE	RESULT
Football (M)	18	Inter Tech. Uni.	01-03 Oct. 2016	NIT Kurukshetra	1st Position
Basketball (M)	12	Inter Tech. Uni.	01-03 2016	NIT Kurukshetra	1st Position



Basketball (W)	12	Inter Tech. Uni.	01-03 2016	Oct.	NIT Kurukshetra	1 <sup>st</sup> Position
Chess (M)	05	Inter Tech. Uni.	01 -03 2016	Oct.	NIT Kurukshetra	1st Position
Basketball (M)	11	Invitational Tou.	12 -14 Nov.2016		Jaypee Uni. Solan	1st Position
Chess (W)	05	Inter Tech. Uni.	01-03 2016	Oct.	NIT Kurukshetra	3rd position
Wushu (M)	01	All Ind. Inter Uni.	26 -28 2016	Oct.	Pbi Uni. Patiala	3rd position
Volleyball (M)	12	Inter Tech. Uni.	01-03 2016	Oct.	NIT Kurukshetra	participation
Badminton(M)	07	Inter. Uni. Champ.	17-23 2016	Oct.	M.D.U .Rohtak	Participation
Chess (M)	04	Inter. Uni. Champ.	13-10 2016	Oct.	G.J. Uni. Hisar	Participation
Lawn Tennis (M)	05	Inter. Uni. Champ.	20-25 2016	Oct.	G.J.Uni. Hisar	Participation
Swimming (W)	05	Inter. Uni. Champ.	24-28 2016	Oct.	P.U. Chandigarh	Participation
Swimming (M)	08	Inter. Uni. Champ.	24-28 2016	Oct.	P.U. Chandigarh	Participation
Basketball (W)	10	Inter. Uni. Champ.	02-06 16	Nov.20	DCRUST Murthal	participation
Cricket (M)	16	Inter. Uni. Champ.	21-28 2016	Nov.	Ch.CSUni.Meerut	participation
Basketball (M)	10	Invitational Tou.	12 -14 2016	Nov	JayPee Uni. Solan	1st Position
Basketball (w)	10	Invitational Tou.	12 -14 2016	Nov	JayPee Uni. Solan	participation
Table Tennis (M)	04	Invitational Tou.	12 -14 Nov.2016		JayPee Uni. Solan	participation
Volleyball (M)	08	Invitational Tou.	12 -14 Nov.2016		JayPee Uni. Solan	participation
Volleyball (M)	12	Inter. Uni. Chm.	13 -18 Oct.2016		Pbi. Uni. Patiala	Participation
Lawn tennis (w)	03	Inter university	16-20 Jan 2017		Amity university	Participation
Football (m)	20	Inter university	17-25 Jan 2017		D.B university	Participation
Basketball	12	Inter university	17-31 Jan 2017		Pbi. Uni. Patiala	Participation
TableTennis (M)	05	Inter university	08-11 2017	Feb	Chitkarauni .H.P	participation
TableTennis (W)	04	Inter university	08-11 2017	Feb	Chitkarauni.H.P	Participation
wrestling	01	Inter university	24-02-2017		C.D.L.Sirsauni	Participation
Basketball (M)	10	Invitational Tou.	17 – 19 2017	Feb	TU, Patiala	1stPosition
Basketball (W)	10	Invitational Tou.	17 – 19 2017	Feb	Thapar Uni. Patiala	1stPosition
Football (M)	14	Invitational Tou.	17 – 19 2017	Feb	TU, Patiala	1stPosition
Volleyball (M)	10	Invitational Tou.	17 – 19 2017	Feb	TU, Patiala	2ndPositon
Badminton (w)	04	Invitational Tou.	17 – 19 2017	Feb	TU, Patiala	2nd Position
Table tennis(M)	04	Invitational Tou.	17 – 19 2017	Feb	TU, Patiala	Participation
Cricket(M)	14	Invitational Tou.	17 – 19 2017	Feb	TU, Patiala	1stPosition

Athletics (100m)M	01	Invitational Tou.	17 – 19 Feb 2017	TU, Patiala	2ndPosition
Athletics (100m)M	01	Invitational Tou.	17 – 19 Feb 2017	TU, Patiala	3rdPosition
Athletics (200m)M	01	Invitational Tou.	17 – 19 Feb 2017	TU, Patiala	1stPosition
Athletics (200m)M	01	Invitational Tou.	17 – 19 Feb 2017	TU, Patiala	3rd Position
Athletics (400m)M	01	Invitational Tou.	17 – 19 Feb 2017	TU, Patiala	1st Position
Athletics (400m)M	01	Invitational Tou.	17 – 19 Feb 2017	TU, Patiala	3rd Position
Athletics(100m) W	01	Invitational Tou.	17 – 19 Feb 2017	TU, Patiala	2nd Position
Athletics(100m) W	01	Invitational Tou.	17 – 19 Feb 2017	TU, Patiala	3rd Position
Athletics (200m)W	01	Invitational Tou.	17 – 19 Feb 2017	TU, Patiala	2ndPosition
Athletics (200m)W	01	Invitational Tou.	17 – 19 Feb 2017	TU, Patiala	3rd Position
Athletics (400m)W	01	Invitational Tou.	17 – 19 Feb 2017	TU, Patiala	1st Position
Athletics (400m)W	01	Invitational Tou.	17 – 19 Feb 2017	TU, Patiala	2ndPosition
Athletics (L. jump) M	(L. 01	Invitational Tou.	17 – 19 Feb 2017	TU, Patiala	2nd Position
Athletics (L. jump) M	(L. 01	Invitational Tou.	17 – 19 Feb 2017	TU, Patiala	3rd Position
Athletics (L. jump) W	(L. 01	Invitational Tou.	17 – 19 Feb 2017	TU, Patiala	2nd Position

## THAPAR INSTITUTE OF ENGINEERING AND TECHNOLOGY (TIET) COUNSELLING CELL (TUCC)

“Thapar Institute of Engineering and Technology (TIET) Counselling Cell (TUCC)” has the following Key Responsibility Areas (KRAs):-

- To provide assistance of the highest quality to ensure students’ progress towards completion of their education and accomplishment of their personal development.
- To support the aim of professional counseling to empower diverse individuals, families, and groups to accomplish mental health, wellness, education, and career goals (ACA, 2014), while advancing the vision of Thapar Institute of Engineering and Technology (TIET) of excellence in learning and assisting students to become self-aware and socially responsible leaders with a global perspective of tomorrow.
- To be a resource for students who seek help in dealing with personal issues ranging from adjustment problems to major crisis.

### A. PROGRAMMES FOR STUDENTS:

Let’s Talk, Individual Counseling, Group Counseling, Under “Circle of Hope” group sessions with following themes were organized:

- Social Anxiety Group

- Ride The WAVE: Act for Anxiety
- Making The Grade
- Be Real
- Appetite for Life
- Green Mindfulness
- Developing Healthy Relationships
- Mood and Anxiety 101
- Anxiety and Depression 102
- Study Skills
- Improving Health: Chronic Disease Self-Management Program
- Emotional Skills Group
- Cognitive Skills Group
- Four Pack (Addictions Harm Reduction)
- Stress Free Zone
- Beyond Labels
- Cope and Thrive
- Women's Group

#### B. PROGRAM FOR STAFF:

##### Student Mentorship Initiative:

- In a proactive effort to support and guide university students of first-year, under the aegis of DOSA, we started the Student Mentorship Programme aimed at promoting academic success and well-being.
- The Programme enables selected faculty to serve as mentors and to remain in close and consistent contact with the students (batch of 25 each) throughout their period of study on campus. The purpose is to cater to their academic and intellectual needs and help them make a successful transition from high school to tertiary education.
- The students get a faculty mentor in the very first year itself, as a lot of fresh entrants struggle with the volume of work involved in their first-year because it is different from the work they were used to at school. So in lieu of that they need a more holistic approach that will look at all aspects of their development and help them successfully bridge the gap between high school and university.
- The mentors along with Thapar Institute of Engineering and Technology (TIET) Counseling Cell (TUCC), Centre for Training & Development (CTD) and Wardens of hostels emphasize in coordinating and providing support for academic success, identity development, emotional health, leadership development, belonging and community consciousness.

#### C. DEPARTMENTAL INITIATIVES:

- School of Chemistry and Biochemistry: Session on "Self-Management" was conducted on 3rd March, 2016 for the M.Sc Chemistry (IInd Year) students, giving them in depth awareness about stress resistance, time management, self-motivation and healthy lifestyle.
- Department of Mechanical Engineering: Session with UG & PG academically weak students was conducted on 20th February, 2017, to find out psychological reasons for their poor academic record and to boost their motivation and confidence.

- Department of Biotechnology: Session with UG & PG academically weak students was conducted on 19th April, 2017, to find out psychological reasons for their poor academic record and to boost their motivation and confidence.

#### D. OTHER ACTIVITIES OF TUCC:

Member of Disability Resource Center (DRC): Which offers a variety of services to students with documented disabilities, including learning disabilities, deaf/hard of hearing, blind/low vision, mobility limitations, mental health difficulties (depression, anxiety etc.) and other medical disabilities.

Member of Wellness Cluster: offers counselling regarding proper nutrition, proper exercise and healthy habits so as to provide psychological support to the students to prevent and reduce the incidence of obesity in young students.

### Criterion – IV

#### 4. Infrastructure and Learning Resources

##### 4.1 Details of increase in infrastructure facilities:

Facilities	Existing	Newly created	Source of Fund	Total
Campus area	270 Acres + 26.29 Acres (Derabassi Campus)	NIL	Fees , Income from Research & Consultancy projects, Executive Development Programmes	296.29 acres
Class rooms	108  (9027.00Sq. mts)	28  <b>3702.74 sqm under construction</b>	Fees , Income	136
Laboratories	105	35  <b>2625.90 sqm (under construction</b>	Fees	140
Seminar Halls	7	3  <b>493.74 sqm</b>	Fees	10
No. of important equipments purchased (≥ 1-0 lakh) during the current year.	63		Fees	63
Value of the equipment purchased during the year (Rs. in Lakhs)	Rs 10.22 Cr		Fee income + Research Grant	Rs 10.22 Cr

Others: (Expenditure on enhancing computer networks and infrastructures)	Rs.387.10 Lakhs		Rs.387.10 Lakhs
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#### 4.2 Computerization of administration and library

Thapar Institute of Engineering and Technology University, Patiala is in the process of implementing e-solutions software for its academic and other related activities including human resource management and financial management. Academic activities, such as, conduct of mid semester test and end semester examination, central repository of marks and grades of the students, assigning the grades to the students by faculty members and students reaction survey have been implemented using this software. Online facility for registration information, date-sheet, seating plan and duty chart has been provided to all the concerned through Web-Kiosk. On-line quizzes have been started for core courses. Computerized DMCs of students are sent to the parents.

#### 4.3 Library services:

	2015-16						2016-17			
	Existing		Newly added		Total		Newly added		Total	
	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value
Text Books	88543		4119	26.06 Lakhs	92662		3204	14,72,819.71	95866	
Reference Books										
e-Books	2184		184		2184		-		2463	
Journals (Print)	78		48	76.96 Lakhs	78		59 in total including Magazine	1,01,99,247.3	59 in total including Magazine	
e-Journals	6538		2533		8891		8891+204		9095	
Digital Database	12		1		12		-		12	
CD & Video	3000+				3000+		500+		3500+	
Others (specify) Magazines	22				22		21		21	
Standards	4284		--		4284		-		4284	
Print Thesis	2539		69		2608		87		2695	
Bound Journals	4973		172		5145		-		5145	

#### 4.4 Technology up gradation (overall)

	Total Computers	Computer Labs	Internet	Browsing Centres	Computer Centres	Office	Dept.	Others
Existing	1400	<b>16</b>	2109 Mbps	Wifi and wired computer network facility is available all around campus including academic area, hostels, faculty residence, cafeterias and all labs	1 dedicated computer centres	-	-	Microsoft/MATHWORKS/TURNITIN Campus agreement
Added	Firewall UTM Sophos XG 750 (2)  Dell Power Edge R530 (1)  Dell OptiPlex 5250 (1)	-	-	Deployment/Strengthening of LAN/WLAN in Hostel M, Hostel N, Hostel E, Hostel J, Lab D112 MED, ECED and IP Surveillance in Hostel K & L and of TIET outside Main Gate, Hostel E.	----	Faculty can purchase computers from faculty developments funds from institute	----	Renewal of Microsoft/MATHWORKS/TURNITIN Campus agreement
Total	1400	<b>16</b>	2109 Mbps		1	<b>258+</b>	<b>15</b>	----

Internet access is available in all Offices/Labs/Academic Blocks/Library/Hostels/Residences

4.5 Computer, Internet access, training to teachers and students and any other programme for technology up -gradation (Networking, e-Governance etc.)

The following facilities are added:

**Computing:**

- ACUNETIX standard edition concurrent License in CITM NOCCampus Wide Subscription/renewal for Plagiarism TURNITIN Software
- MATHWORKS Campus Agreement for Faculty/Staff/Students for unlimited licenses for all toolbox of MATLAB and MATHWORKS.
- Microsoft Campus agreement for Desktop OS Licensing/ office for faculty and staff and Microsoft DreamSpark for Software Development Tools for Students and faculty.
- Student Attendance Soft. Solution for institute
- Semester Evaluation Online Portal for institute

**Internet Access:**

- Institute is connected with two Internet Leased Line from 1Gbps and 1085 Mbps (STM\*7). Institute has aggregate bandwidth  $1085 + 1024 \text{ Mbps} = 2109 \text{ Mbps}$ .
- Institute has 100 Mbps ELL (Extended Leased Line) Connectivity to Derabassi Campus.
- Institute has 10098 users created for Internet access of students/staff/faculty/researchers, in which 7400 concurrent active users accessing Internet from academic area/ hostels and residence.
- Institute has deployed core and distributed switching fabrics to provide LAN/WLAN Services.
- Institute has deployed its own cloud based full HD video conferencing system.
- Institute has provisioned Firewall-UTM to give controlled access of Internet and its allied services.
- Institute has deployed its own Private Cloud for hosting of Internet services. Currently, following Internet services are hosted on Thapar Institute Cloud:
  - Thapar Institute Main Website
  - LMTSM
  - Webkiosk (Intranet)
  - Webkiosk (Internet)
  - QEEE (Quality Enhancement in Engineering Education Service)
  - Institute DNS Cache Server
  - Firewall UTM iView/Log Server
  - Video Conferencing Service
  - Kaspersky Unified Management Service

**The following bandwidth policy are applied**

- Students: Download 2.8 Mbps and Upload 1 Mbps
- Faculty/Staff/Researchers: Download 4 Mbps and Upload 1 Mbps
- Institute has upgraded the UTM/Firewall to cater the increased internet load for users.

**Training to teachers and students:**

- CITM organizes online courses under Quality Enhancement in Engineering Education an initiative by MHRD. Thapar Institute has been consistently highly ranked (Partner) by QEEE organizer IIT Madras.

➤ List of courses registered with QEEE during session **Aug-Nov, 2017:**

Sr. No.	Topic as per QEEE
1	Programming in C and Data Structures
2	Memory and IO - Advanced Computer Architecture
4	Programming Style - Programming and Data Structures
5	Intermediate Code Generation - Principles of Compiler Design
6	Electromagnetic Waves
7	Introduction to Signal and System
8	Modern Wireless Communication System
9	ALGEBRA
10	STATISTICS AND PROBABILITY DISTRIBUTION
11	Design with OPAMP
12	MOS Transistor Principle
13	Baseband Communication

➤ List of courses registered with QEEE during session **Jan-April 2017:**

S.no	Topic
1	Solar DC
2	Differential Amplifiers - Analog Electronic Circuits
3	Natural Convection, Boiling and Condensation - Convection Heat Transfer
4	Digital System Design - Digital Electronics
5	Air Pollution Control Engineering - Environmental Engineering



6	Frequency Domain Representation of Continuous Time Signals - Signal and Systems
7	Operator Overloading - Object Oriented Programming
8	Basic Machine Tools and Metal Cutting Principles - Manufacturing Process

### Networking:

- UTM Firewall
- LAN/WLAN deployment and Laying /Cabling of Hostel-E
- LAN/WLAN deployment and Laying /Cabling of Hostel-J
- LAN deployment and Laying /Cabling of D112 MED, ECED
- LAN deployment and Laying /Cabling of B212 & B213 EIED
- IP Surveillance and LAN/WLAN deployment of Hostel K & L
- APC Backup UPS 1000 VA-4 No and 16U Wall Mount Rack
- IP Surveillance and LAN/WLAN deployment of ThaparInstitute Main Gate
- LAN deployment and Laying /Cabling of R&D Block Room No 303
- LAN deployment and Laying /Cabling of R&D Block and SEE
- LAN deployment and Laying /Cabling of R&D Block and EIED
- LAN/WLAN/UPS deployment and Laying /Cabling of Boys Hostel – BH1 to BH4
- LAN/WLAN/UPS deployment and Laying /Cabling of New Girls Hostel
- LAN/WLAN deployment and Laying /Cabling of PEB Labs (EIED, MED, CHED, Civil Department)

### E-Governance: Institute has ERP and following Upgradation are done

- Integration of payment gateway with Webkiosk to pay the fee online.
- Payment of fee thru PayTm.
- Upload marks in Webkiosk through excel.
- Application form for faculty recruitment online.
- Webkiosk internet was upgraded to tomcat version 7.0.56
- Parent's login added in Webkiosk internet

### Instrument and PC Repair Laboratory

#### Activities

- Repair & Maintenance of Instruments/ Equipment
- Repair & Maintenance of Personal Computers/ Peripherals
- Provide guidance technical assistance for purchase of new equipment

#### Major Equipment

- Multi-function calibrator
- Digital storage oscilloscope 200 mhz
- Hot air desoldering station
- Scientific function generator 1 mhz

- Universal frequency counter 1.1 ghz
- Weltrondesoldering station

#### Repair and maintenance work taken by CITM

The figures on repair and maintenance work taken by CITM during last five years.

Year	Total Equipment Repaired	Total PC/Laptop Repaired
2011-2012	105	227
2012-2013	114	134
2013-2014	129	171
2014-2015	157	245
2015-2016	182	301
2016-2017	109	219

#### Other:

Centre of Information and Technology Management (CITM) has been established in the institute after integrating three units, namely, Computer Centre, Centre for Information Super-Highway and University Science Instrumentation Centre. This centre has been established to cater the needs of users involving implementation, maintenance and support activities related to LAN/WLAN, software and hardware; procurement, support and maintenance of various equipments of users.

CITM offers Internet access and network services to institute. CITM has two static leased line connections: 1085 Mbps leased line from Reliance and 1000 Mbps from National Knowledge Network (NKN). The Campus-wide Local Area Network (LAN), which currently has 7400 live nodes (wired and wireless), is backboneed by Optical Fiber connected with layer-3 and layer-2 switches, structured with CAT6 cabling.

The CITM has state-of-the-art computational labs and one DATA CENTRE. CITM Labs remain open from 8.00 AM to 6.30 PM on all working days and from 9.00 AM to 5.30 PM on Saturdays. The computational facility in the Centre includes 14 Dell Power Edge servers' and 97 nodes and other peripherals. CITM is a member of MATHWORKS Campus Agreement and Microsoft Campus Agreement. CITM organizes online courses under Quality Enhancement in Engineering Education an initiative by MHRD. Institute has been consistently highly ranked by QEEE organizer IIT Madras.

CITM also provides repair and maintenance of Electronic Instruments/Equipment and, PCs and peripherals used in various Laboratories. This centre is contributing in the implementation of ERP software that includes modules financial management, inventory management, human resource management, purchase management, academic activities etc. and its related support to the users of institute. CITM is also responsible for maintenance and administration of Thapar institute Website. The main objective of centre is to provide better support and services to the users for their individual as well as collective growth.

4.6 Amount spent on maintenance in lakhs:

i) ICT	<i>Rs. 7838.07 lakhs</i>
ii) Campus Infrastructure and facilities	<i>Rs 3463.28lakhs</i>
iii) Equipments	<i>Rs 1257.72 lakhs</i>
iv)Others	<i>Rs 5947.55lakhs</i>
<b>Total:</b>	<b><i>Rs. 18506.62 Lakhs</i></b>

**Criterion – V**

**5. Student Support and Progression**

5.1 Contribution of IQAC in enhancing awareness about Student Support Services

The newly admitted students are apprised of the activities of the counseling cell during the orientation program by the Chief Student Counselor appointed by the Director. The department nominates faculty member(s) to this cell on the advice of the Chief Student Counselor. General information is sent out to all students of the department informing them of the services extended by the cell and inviting them to meet the faculty coordinator of the department. The students are encouraged to seek guidance on academic, general or psychological issues, if necessary. Also, semester wise results are forwarded to the Student Counselor of the department by the Academic Section who prepares a list of students whose performance is observed to be below average or poor. Such students are then invited to meet the counselor or any faculty member of their choice on a fixed date and time (changes possible on request of the student). Such meetings are arranged at least twice in a semester and are chaired by the Head of the Department and may include anybody who might be of help to the student. The students are advised to improve performance and are given suggestions or options for clearing their backlog courses.

The advising process is designed to ensure that each student selects a set of courses during each semester that meets minimum grade requirements and which can result in the student making efficient and orderly progress in meeting the academic requirements as listed in the course scheme. The advising process also helps to identify and solve problems the student may be confronting in achieving the educational objectives.

Each department has an Academic Counselor for advising the students. He is also a one point contact for issues related to academic performance or any other issues faced by the students. The students are encouraged to meet him to seek guidance on any matter related to academic performance. Individual faculty members routinely spend time with students during and after classes discussing any issues related to the course, student problems, and advice them on all matters as desired related to academic, placement, industrial training and career goals. Faculty members are often members of co-curricular activities in the department and provide ample opportunities for faculty to answer student questions in an informal environment.

The admission committee is the first advisor until the students join the program formally and after that the responsibility of advisory is transferred to a program coordinator. The program coordinator assists the students with general education and evaluation requirements, maintains student records and helps in solving student problems. Faculty advisor is assigned to the students who help students to evaluate career options, discuss academic issues and provide referral to other resources on campus.

The newly admitted students are apprised of the activities of the counseling cell during the orientation program by the chief student counselor appointed by the director. The department nominates faculty member(s) to this cell on the advice of the chief student counselor. General information is sent out to all students of the department informing them of the services extended by the cell and inviting them to meet the faculty coordinator of the department. The students are encouraged to seek guidance on academic, general or psychological issues, if necessary. Also, semester wise results are forwarded to the student counselor of the department by the academic section who prepares a list of students whose performance is observed to be below average or poor. Such students are then invited to meet the counselor or any faculty member of their choice on a fixed date and time (changes possible on request of the student). Such meetings are arranged at least twice in a semester and are chaired by the head of the department and may include anybody who might be of help to the student. The students are advised to improve performance and are given suggestions or options for clearing their backlog courses.

The advising process is designed to ensure that each student selects a set of courses during each semester that meets minimum grade requirements and which result in the student making efficient and orderly progress in meeting the academic requirements as listed in the course scheme. The advising process also helps to identify and solve problems, which the student may be confronting in achieving the educational objectives.

Each program has appointed a member of the faculty as an academic counselor for advising the undergraduate students. He/she is also a one point contact for issues related to academic performance or any other issues faced by the students. The students are encouraged to meet him to seek guidance on any matter related to academic performance. Faculty members are often members of co-curricular activities and technical chapters in the department and it provides a platform with ample opportunities for faculty to interact with students in an informal environment.

#### **Faculty-Student mentorship program:**

Dean of Student Affairs (DoSA) has started a student mentorship initiative program to create an interactive and target oriented mentorship program involving students, faculty and parents to address common student concerns ranging from anxiety, stress, fear of change and failure, homesickness and other academic concerns. The purpose is to mentor and monitor the academic and behavioral patterns of the students through faculty mentorship.

The students are assigned to each faculty member in groups of 20 to 25. Preferably, the students of a particular branch are assigned to the faculty members of that department. This system was initiated from the students entering the university since July 2016. These students are under continuous tutelage of the faculty mentor for a full period of four years of his/her study. In subsequent year, the new students will be added to this group of each faculty member, thereby making the strength to be nearly 100 in 2020. Faculty mentors guide students and help them to adjust in the university life. Through a supportive environment, the students are able to make the most of their university experience. Program coordinators/Student counsellors are available throughout as a resource and they assist the prospective candidates and advise the incoming students about academic requirements to get them started at the program. Advising worksheet, wherever necessary, is used by mentors to maintain the records of students.

## 5.2 Efforts made by the institution for tracking the progression

The university strives to foster in the minds of engineering students, the importance of continuous learning and critical appraisal, a sense of service and professional ethos and integrity through an academic environment on the campus and through curricular and co-curricular activities.

The academic performance of the student is evaluated and monitored as under:

- Pre-requisite (if any) check before registration on web-kiosk (an ERP module developed by the university for monitoring student performance and evaluation)
- In web-kiosk, complete academic files of student are maintained that helps to monitor student's progress

### **Evaluation of student progress:**

Various assessment tools/evaluation methods those are well defined in the academic regulations to assess the impact of delivery of course/course content towards the attainment of course/program outcomes are used. Assessment tools are broadly categorised as direct methods and indirect methods. Direct/Quantitative methods have a specific weightage towards the total marks allocated to a course. The evaluation is based on a pre-decided weightage for a variety of activities a student is expected to do for each course. Indirect/Qualitative methods do not have direct weightage; however these are used for improvement in future to meet the targets of program objectives.

The course instructor completes performance evaluation of each registered student in the course through an ongoing performance review system and updates the student's ongoing performance record from time to time.

### **Direct/Quantitative method:**

1. Evaluation through written descriptive examination of two/three hours.

- Mid Semester Test
- End Semester Examination

2. Sessional

- Quiz/(s)
- Assignments/Tutorial assignments

- Group discussions (if relevant)
- Announced /Unannounced Tutorial Tests
- Laboratory work evaluation
- Viva-voce examination
- Practical file/Project report
- Project work
- Presentations

Activities taken under sessional are at the disposal of course instructor for evaluation of each student in a class. The procedure of assessment under each component is explained in brief as follows:

- (a) Mid Semester Test- This performance assessment is carried out in the mid of semester through descriptive examination of two hours duration.
- (b) End Semester Examination- End semester examination is a metric for assessing whether all the POs are attained or not. Examination is focused on attainment of course and program outcomes using a descriptive examination of three hours duration.
- (c) Sessional
  - (i) Quiz- Quizzes is a multiple choice questions (MCQ) or one line answer based examination system that provides an easy to use environment for an evaluator.
  - (ii) Assignment- Each and every student is assigned with course related tasks during every course work once or twice and assessment is done based on their performance. Marks are assigned depending on their innovation in solving/deriving the problems.
  - (iii) Tutorial Assignment- The assignment is a qualitative performance assessment tool designed to assess students' knowledge of engineering practices, framework, and problem solving. An analytic rubric was developed to assess students' knowledge with respect to the learning outcomes associated with the scenario tool.
  - (iv) Laboratory Work evaluations: Each student performs set of experiments related to course using hardware and/or software tools. Rubrics for lab evaluation are developed to assess student's knowledge, hands-on skills, viva voce examination etc.
  - (v) Project work: Students carry out minor project work in few courses in a team of 4-5 students. The project problem is related to fundamental principles of the course. Each student is evaluated through project demonstration, presentation and report writing skills.

At the end of the semester the students are awarded a letter grade in each course depending upon the overall class performance. The award of grade is based on the performance of the student relative to class performance.

The university has a grading system based on relative performance that generally follows a normal distribution. The mean and class standard deviation are considered for grading the students into various grades described in the general criteria. The cut off for grades are decided by the faculty coordinator/instructor and he/she may use the suggested cut-offs by customized software to assist in documenting and grading student's performance. For a student to meet the outcomes listed above, he/she must pass the course with a minimum grade of 'D' as applicable for 2013 batch and 'C-' for 2015 batch. Description of each letter grade with performance index is given in Table 1.1 (for 2013 batch) and in Table 1.2 (for 2015 batch).

**Table 1.1: Description of letter grade with performance index as applicable to 2013 batch**

<i>Letter Grade</i>	<i>Performance</i>	<i>Grade Points</i>
<b>A+</b>	Outstanding	<b>10</b>
<b>A</b>	Excellent	<b>10</b>
<b>B</b>	Good	<b>8</b>
<b>C</b>	Average	<b>6</b>
<b>D</b>	Marginal	<b>4</b>
<b>E</b>	Exposed	<b>2</b>
<b>F</b>	Fail	<b>0</b>
<b>I</b>	Incomplete	<b>-</b>
<b>X</b>	Inadequate Attendance/ Dropped/Unregistered	<b>-</b>

Each letter grade indicates the level of performance of the student in a particular course, based on a ten-point scale. Grade points given in the Table 1.1 or Table 1.2 are used for computing the Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA) depending upon the enrolled batch in 2013 and 2015 respectively.

**Description associated with each letter grade as applicable to 2013 batch is as follows:**

**A<sup>+</sup>, A, B, C, & D** grades: These grades are the pass grades.

**A<sup>+</sup>** grade shall be awarded in rare cases i.e award of this grade is not mandatory and shall be awarded where performance of the student is exceptional among the students getting ‘A’ grade. Even the best student of any class needs to be good enough to be awarded the ‘A<sup>+</sup>’ grade. CoE shall review all ‘A<sup>+</sup>’ grades to be awarded.

**E, F, I, X** grades: If these grades are awarded in any course then that course shall be termed as backlog course.

**E** grade: This grade is awarded when a student has attended at least 75% of total classes (collectively lectures, tutorials and practical) as per the teaching load of the course and fails in the evaluation process.

**F** grade is a fail grade and student has to register for that course again when it is offered next time. A student, who even having 75% attendance, but scores very low marks in the end semester exam shall be awarded ‘F’ grade.

**X** grade: This grade is also a fail grade and is awarded as a result of detention(s) on the basis of shortage of attendance. A student, who earns ‘X’ grade in a course, shall have to register for that course again when it is offered in the subsequent semesters. A student who is allowed to drop a semester shall also be awarded ‘X’ grade in the courses of dropped semester.

**I** grade: This grade is awarded when a student having good academic record, but unable to appear in the end semester exam due to unforeseen reasons justifiable to instructor in charge.

**Description associated with each letter grade applicable to 2015 batch is as follows:**

**A<sup>+</sup>, A, A<sup>-</sup>, B, B<sup>-</sup>, C, & C<sup>-</sup>** grades: These grades are the pass grades.

**A<sup>+</sup>** grade shall be awarded in rare cases i.e award of this grade is not mandatory and shall be awarded where performance of the student is exceptional among the students getting ‘A’ grade. Even the best

student of any class needs to be good enough to be awarded the 'A+' grade. CoE shall review all 'A+' grades to be awarded.

E, F, I and X grades are same as these are described in 2013 scheme.

The Dean of Academic Affairs (DoAA)/ Controller of Examinations (CoE) should receive the application of such cases (unforeseen circumstances) along with relevant evidence before the award of grades so that, if found fit, the student shall be awarded 'I' grade by deemed authority.

In case a student has backlog in courses due to 'E' or 'I' grade, then to clear backlog, student can exercise following options with the approval of DoAA.

- He/She may register for that course again when it is offered next in subsequent semester(s)
- OR
- The student may register and appear for a single examination i.e. auxiliary examination conducted immediately after the end semester exam in which he/she has earned "E" or "I" grade on a date notified by the DoAA office.

**Table 1.2: Description of letter grade with performance index as applicable to 2015 batch**

<i>Letter Grade</i>	<i>Performance</i>	<i>Grade Points</i>
<b>A<sup>+</sup></b>	Outstanding	<b>10</b>
<b>A</b>	Excellent	<b>10</b>
<b>A<sup>-</sup></b>	Very Good	<b>9</b>
<b>B</b>	Good	<b>8</b>
<b>B<sup>-</sup></b>	Fair	<b>7</b>
<b>C</b>	Average	<b>6</b>
<b>C<sup>-</sup></b>	Marginal	<b>5</b>
<b>E</b>	Exposed	<b>2</b>
<b>F</b>	Fail	<b>0</b>
<b>I</b>	Incomplete	<b>-</b>
<b>X</b>	Inadequate Attendance/ Dropped/Unregistered	<b>-</b>

However the student with 'F' or 'X' grade in any course:

He/She may register for that course when it is offered next in subsequent semester(s).

The details of the evaluation of UG student performance are mentioned in academic regulations of university and can be found at the link:

<http://www.thapar.edu/images/pdf/Academic%20RegulationsAugust%202017.pdf>

A student must study the courses given in the scheme and meet credit requirements as approved by the University Senate. The academic section of the university monitors the student's progress against the degree requirements. A student must obtain minimum CGPA of 4.5 on 10 point scale at the end of program to fulfil the degree requirements and be eligible for award of degree. Student files are updated by the academic section from time to time to keep the students updated. The student's performance



record can be checked on the secure web-kiosk by logging in the “Student Section” using registration number and password by student himself/herself.

The typical monitoring sheet to monitor the student progress is shown in the Table 1.3.

**Table 1.3: Program check sheet**

S. No	CS	CS	CS	CS	CS	CS	CS	CS	CURR	PREV	NET	SGP A CGP A	REMARKS
REG N NO	CR D	CR D	CR D	CR D	CR D	CR D	CR D	CR D	CRD RG	CRD RG	CRD RG		
NAM E	GD	GD	GD	GD	GD	GD	GD	GD	CRD ER	CRD ER	CRD ER		
	PN T	PN T	PN T	PN T	PN T	PN T	PN T	PN T	GPNT S	GPNTS	GPNT S		

Prepared by

Checked by

Asstt. Registrar

Registrar

Controller of  
Exams

REGN NO: Registration number

PNT: Points

CS: Courses

CURR: Current

CRD: Credit

CRD RG: Credit regular

GD: Grade

CRD ER: Credit earned

GPNTS: Grade points

CGPA: Cumulative grade point average

SGPA: Semester grade point average

5.3 (a) Total Number of students

UG	PG	Ph. D.	Others
6354	1374	696	0

(b) No. of students outside the

4274

state

(c) No. of international students

63

No	%
6066	72.03%

Men

Women

No	%
2358	27.97%

Last Year UG (2015-16 batch)						This Year					
General	SC	ST	BC	Physically Challenged	Total	General	SC	ST	BC	Physically Challenged	Total
1472	114	7	27	0	1620	1513	48	1	25	0	1587

Demand ratio -1:14 Dropout % - 8.9%

5.4 Details of student support mechanism for coaching for competitive examinations (If any)

Nil

No. of students beneficiaries

5.5 No. of students qualified in these examinations: This data is approximate as exact numbers are not available

NET	25	SET/SLET		GATE	552	CAT	456
IAS/IPS etc	3	State PSC	5	UPSC	6	Others	95

5.6 Details of student counselling and career guidance

The University has a counseling cell which is chaired by a Chief Student Counselor appointed by the Director. Each department/school nominates faculty member(s) to this cell on the advice of the Chief Student Counselor. General information is sent out to all students of the department informing them of the services extended by the cell and inviting them to meet the faculty coordinator of the department. The students are encouraged to seek guidance on academic, general or psychological issues, if necessary.

The semester wise results are forwarded to the Student Counselor of the department by the Academic Section who prepares a list of students whose performance is observed to be below average or poor. Such students are then invited to meet the counselor or any faculty member of their choice on a fixed date and time (changes possible on request of the student). Such meetings are arranged at least twice in a semester and are chaired by the Head of the Department and may include anybody who might be of help to the student. The students are advised to improve performance and are given suggestions or options for clearing their backlog courses. The advising process is designed to ensure that each student selects a set of courses during each semester that meets minimum grade requirements and which can result in the student making efficient and orderly progress in meeting the academic requirements as listed in the course scheme. The advising process also helps to identify and solve problems the student may be confronting in achieving the educational objectives. The student academic Counselor is also a one point contact for issues related to academic performance or any other issues faced by the students. The students are encouraged to meet him/her to seek guidance on any matter related to academic performance. Individual faculty members routinely spend time with students during and after classes discussing any issues related to the course, student problems, and advice them on all matters as desired related to academic, placement, industrial training and career goals. Faculty members are often members of co-curricular activities in the department and provide ample opportunities for faculty to answer student questions in an informal environment. The details of these activities are available with each department/school and will be made available during the visit of the expert committee.

No. of students benefitted

Overall 500
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#### 5.7 Details of campus placement (2016-17, UG only)

<i>On campus</i>			<i>Off Campus</i>
Number of Organizations Visited	Number of Students Participated	Number of Students Placed	Number of Students Placed
223	1236	836	96

#### 5.8 Details of gender sensitization programmes-

Thapar Institute of Engineering and Technology University is committed to creating and maintaining a community in which students, teachers and non-teaching staff can work together in an environment free of violence, harassment, exploitation, intimidation and stress. This includes all forms of gender violence, sexual harassment and discrimination on the basis of sex/gender or amongst the same sex members. Every member of the University should be aware that while the University is committed to the right to freedom of expression and association, it strongly support gender equality and opposes any

form of gender discrimination and violence. All the complaints in this regard can be made to the committee duly constituted by the Thapar Institute of Engineering and Technology University, Patiala.

## 5.9 Students Activities

### 5.9.1 No. of students participated in Sports, Games and other events

State/ University level  National level  International level

### No. of students participated in cultural events

State/ University level  National level  International level

### 5.9.2 No. of medals /awards won by students in Sports, Games and other events

Sports: State/ University level  National level  International level

Cultural: State/ University level  National level  International level

### 5.10 Scholarships and Financial Support:

	Number of students	Amount (Rs IN LAC)
Financial support from institution	538	527.26
Financial support from government	65	104.18
Financial support from other sources	25	4.25
Number of students who received International/ National recognitions	NIL	NIL

### 5.11 Student organised / initiatives

Fairs : State/ University level  National level  International level

Exhibition: State/ University level  National level  International level

5.12 No. of social initiatives undertaken by the students

5.13 Major grievances of students (if any) redressed: Nil

## **Criterion – VI**

### **6. Governance, Leadership and Management**

#### **6.1 State the Vision and Mission of the institution**

##### **Vision**

"To be recognized as a leader committed to Excellence in Higher Education, Research and Innovation that meets the aspirations of the global community."

##### **Mission**

- To redefine and revolutionize Indian engineering education by unlocking the beauty of engineering and applied sciences for the current and future generation.
- To instil excitement of engineering in young minds.
- To make Patiala, Punjab and India proud of being the most sustainable region of the world through creating, disseminating and applying actionable engineering knowledge.

#### **6.2 Does the Institution has a management Information System**

Yes. Thapar Institute of Engineering and Technology University, Patiala has implemented e-solutions software for its academic and other related activities including human resource management and financial management. Academic activities, such as, conduct of mid semester test and end semester examination, central repository of marks and grades of the students, assigning the grades to the students by faculty members and students reaction survey have been implemented using this software. Online facility for registration information, date-sheet, seating plan and duty chart has been provided to all the concerned through Web-Kiosk. On-line quizzes have been started for core courses. Computerized DMCs of students are sent to the parents.

#### **6.3 Quality improvement strategies adopted by the institution for each of the following:**

##### **6.3.1 Curriculum Development**

##### **Undergraduate programs**

Undergraduate engineering students are taught a series of courses in basic sciences to develop understanding of scientific principles and methods, analytical ability and rigour. These courses are followed by courses in engineering sciences to provide a smooth transition from basic sciences to professional engineering courses. A series of courses in technical arts are designed to develop engineering skills through training in engineering drawing, measurements, computing skills, manufacturing technology and effective communication. The professional courses in the chosen field of specialisation are meant to develop creative abilities for the application of basic and engineering sciences to engineering problems involving planning, design, manufacturing, maintenance and research and development. In addition, courses in humanities and social sciences are incorporated to develop appreciation of the impact of science and technology on society. The undergraduate curriculum consists of two main components i.e. core courses and professional courses. The core courses lay emphasis on concepts and principles. It involves teaching of subjects in Basic Sciences,

Humanities and Social Sciences and Engineering Science. Attention is also paid to develop communication skills in English language - the medium of instructions. The Professional courses lay emphasis on system analysis, design, manufacturing and professional practice. There is an in-built flexibility to encourage students to specialise in streams of their choice through a system of professional and free electives. The University strives to foster among its students a strong desire and capacity for continuous learning as well as self appraisal to develop sterling human & professional qualities and a strong sense of service to society through designed, curricular, co-curricular activities and congenial campus environment.

### **Post-graduate programmes**

#### **MASTER OF ENGINEERING/TECHNOLOGY (M.E./M.Tech.)**

The University in offering various M.E./M.Tech. programmes has uniformly maintained the basic structure and philosophy of the post-graduate education in engineering in the country. All these programmes, regular or part-time, have their course work classified into two major categories: Core Courses and Elective Courses. The core courses are aimed at imparting knowledge of the relevant basics analytical-tools & techniques necessary to build-up on them elective (professional) courses. Core courses of a particular programme are compulsory for all the students registered in that programme. Elective courses are of professional nature. To be eligible for a degree, a student must complete requisite number of core and elective courses. However, to bring in flexibility a wide choice of electives is offered to the students in order to make their training broad based. Presentation of a Seminar and a project in addition to the course work and further carrying out a thesis/dissertation are necessary components of post-graduate degree. The seminar and project should be on a topic relevant to the area of study, presenting the state-of-art work done on the subject. The literature survey conducted during the preparation of the seminar should highlight the areas for further research work on the subject. The problem taken up for the thesis/dissertation should be as far as possible on the work done for the seminar. Both the seminar and thesis/dissertation are submitted in bound form and are presented during their respective evaluation. In case a student fails to undertake, complete & clear thesis work and completes seminar only he will be eligible for award of Post-graduate diploma only.

#### **MASTER OF COMPUTER APPLICATIONS (M.C.A.)**

The MCA programme aims to train and produce much needed human resource for software industry as increasing applications of computers in almost all areas of human endeavour has lead to a vibrant software industry with concurrent rapid technological changes. The programme is spread over a period of three years consisting of six semesters. The students study courses for five semesters in the University and carryout a Software Development Project (SDP) in the sixth semester in reputed national/multinational companies. The graduates of this programme are absorbed as software professionals, solution developers and system analysts in leading national/multinational companies and other industrial/service organisations working in the area of Information Technology (IT).

#### **MASTER OF SCIENCE (M.Sc.)**

M.Sc. programmes aims to impart application oriented education in the respective area with an integrated approach so as to turn out professionals who will have easy absorbability in industry as well as self employment skills. The course curriculum has been structured to impart education in the areas desired by the industry as well as local needs. The programme is spread over four semesters which

include teaching of both core courses as well as elective courses for first two semesters, a project in the third semester and a dissertation in the final semester.

## **DOCTORAL DEGREE PROGRAMME**

High calibre students with demonstrated capability can register themselves for Ph.D. degrees. There is a laid down course work requirement for the Doctoral Degree Programme for candidates registering after obtaining M.E. degree. The provisions in the rules and regulations governing the programme, aim at ensuring high quality of research leading to Ph.D./D.Sc. degree. Ph.D./D.Sc. programme are offered on both regular and part-time basis. Ph.D./D.Sc. thesis is evaluated by a panel of examiners drawn from the peer group on the topic, both from India and abroad.

## **COURSE Learning Outcomes (CLO)**

The attainment of course learning outcomes was measured for the courses offered during this semester. We had conducted CLO surveys as an in-direct measurement of CLO's twice in the semester (once before the Mid Semester Test and again before the End Semester Exams. Subsequently, a direct measurement of student performance from the questions asked during exams during the semester as linked to learning outcomes was also completed. The scores from the direct and in-direct measures were then combined to assess the overall attainment of course learning outcomes and objectives.

## **ACTION TAKEN REPORT – ACADEMIC REVIEW 2014 and 2016**

An Academic Review of four departments at TIET was completed by Trinity during November 2014 and Jan 2016. A detailed report about the findings of the review was received. The objective of the review was to identify the gaps between the current performance levels and those levels which would be needed to help Thapar rising to a university of significance on the global stage. The academic review covered curriculum, research, staffing, infrastructure, governance, academic and administrative decision making, strategic and implementation plan encompass much of the entire academic culture of the University. The findings report set out a path, by means of a set of recommendations, to achieve a closing of the performance gap. There were also some observations and recommendations which are core to the contemporisation process. A substantial overall plan for change was thereafter prepared. The academic review thus became a first step to develop an action plan for implementing the necessary changes.

## **Laboratory and Physical Infrastructure**

### **INFRASTRUCTURE**

Mccullough-Mulvin Architects are developing the following infrastructure for Thapar Institute of Engineering and Technology (TIET)

- Computer Science Block
- Lecture hall complex
- Library
- Three Student residences for 2500 students
- Other academic buildings
- Face lifting and modernization of existing buildings

A presentation on these building will be made during the steering group meeting.

Thapar has also started procurement of Lab equipment as agreed with Trinity in June 2015. The following equipment is being procured this year:

- 8 CNC Milling Machines
- 8 CNC Turning Machines
- Data Acquisition Systems
- 370 Desktop PC's for Computer, Civil, Electronics and Mechanical Engineering
- Infrastructure for Buggy and Catapult projects

An Innovation Centre/Venture Lab would be set up at TU to run accelerator program open to teams of Thapar students (undergrad and postgrad) with an early-stage business idea. This unique incubator will provide coaching, expert advice, seed funding and access to space and facilities needed to test out and launch new ventures. The program will support students in developing investor-ready ventures and will be supported by a network of Thapar alumni and friends.

### **Research Professorships - Joint TCD / Thapar Chairs**

The Engineering Chair will be named KC THAPAR Chair Professor in Engineering and the Computer Science Chair will be titled LM THAPAR Chair Professor in Computer Science. TIET will transfer the 50% of the annual amount payable for the two chairs by Jan 31, 2016. An invoice has been received from Trinity which is being processed.

TIET will be involved in the selection process of the two chairs and Director TIET or his nominee will act as a member of the selection committee. TIET will also be represented by Dean Contemporization and Accreditations on the short listing committee to be constituted by Trinity.

The hiring process is proposed to be completed by April 30, 2016.

The following areas have been shortlisted for the Thapar chairs to be established at Trinity.

### **Engineering**

*Sustainable Energy Systems:* including energy efficient materials for engineering applications, energy modelling of buildings, lean construction, renewable and smart grid.

*Advanced Manufacturing Engineering:* Advanced robotics, additive processes for manufacturing, product development and design, process monitoring and instrumentation.

*Communications and Media Processing:* signal processing through audio, speech, video and communications processing to content, augmented reality and creative technologies; future networks.

*Water and Sanitation:* including decentralized sanitation, contaminant hydrology and hydrogeology, water resources, aquifer management, low energy/cost water and wastewater treatment.

### **SCSS**

*Smart and Sustainable Places:* including Internet of Things, autonomous systems/services, multi-agent systems, adaptive systems, Intelligent Transportation Systems, smart grid/demand-side management, smart water management.



*Educational Technology:* personalisation, mobile learning, augmented reality, assessment technology and learning analytics.

*Machine Learning for Data and Content Analytics:* Machine and statistical learning algorithms applied to digital content (text, audio, image, video), focus on scalability and integration of methods for modelling, prediction and decision making.

*Future Internet Architectures and Cloud Computing:* Scalable, secure, protocols and architectures to allow energy-efficient delivery of computing services over a globally distributed infrastructure.

### **Curriculum Harmonization**

- Curriculum of first two years discussed and harmonized with Trinity during March and June 2015 visits by Thapar staff.
- The course scheme and syllabus for years 3 & 4 discussed and agreed in October 2015.
- Developed and reviewed the course learning outcomes for the subjects for all years of study.
- The syllabi of all courses finalized and signed off by the respective departments.
- Senior design projects and individual research projects discussed and collected samples of projects that may be replicated. A list of all senior design projects during the last five years has been created.

### **Engineering Design Projects**

- Thapar team joined the relevant TCD academic staff responsible for the Mangonel and Buggy projects and learnt everything hands on while it was conducted at Trinity.
- Developed and detailed the infrastructural and material requirement for various projects (Catapult, Buggy and others). This includes the lab space requirement for the projects.
- Documented the Standard Operating Procedure (SOP) for evaluation of the projects and also how learning outcomes for these projects are attained.
- Identified and developed more project themes that can be offered at TU in view of the larger intake of students.

### **Harmonization of schools**

The schools at Thapar primarily offer only PG programs and also support the engineering departments in teaching of Maths, Science and humanities modules. The engineering departments have aligned their curriculum with Trinity School of Engineering and School of Computer Science. A similar activity has been initiated for the sciences and maths programs. At this time, the TU schools offer conventional M.Sc programs which are largely content driven and in order to modernize and enrich these programs, an academic review has been scheduled by Trinity staff.

Some of the steps that will be undertaken are as under:

- The schools of Physics, Chemistry and Maths underwent an academic review by Trinity. TU schools had submitted their self-assessment report to Trinity for the review process.
- TCD and TU jointly analyzed the findings of the review and submitted an action plan for implementing the findings of the review.
- TU will depute heads of the Schools to TCD for appropriate period for exposure and training for implementing the enrichment program for the mutually agreed period in 2016. The TU team will harmonize the curriculum of the PG programs.

- The schools will check the possibility of offering joint programs akin to engineering programs.
- External examiners in consultation with TCD will be introduced at TU.

### **PG Engineering Programs**

In the first phase of implementation of the Contemporization Program, the UG programs were harmonized and aligned with Trinity. This was extended to include the PG programs offered by the four engineering departments (Civil, Mechanical, Electronics & Computer Engineering). Further, the collaboration with Trinity has been expanded to promote research collaboration through a broad range of strategies, which include:

- Encourage joint research between institutions in the areas of technical knowledge by offering structured PhD programs in joint supervision mode.
- Identify opportunities for an articulation agreement (as with UG programs) for 2-year postgraduate engineering programs.
- Exchange, on a reciprocal basis, faculty and students for limited periods of time for the purpose of education and/or research for postgraduate or PhD programs.
- Exchange of knowledge, faculty and academic staff for short-term and, as funding and other circumstances permit, longer-term projects and visits.
- Joint applications for research funding to various Government and Non-Governmental organizations.
- Setting up of at least one state of the art Research Centre at TIET over the next five years.

The two Thapar sponsored Professors at Trinity will spearhead all or some of these activities besides taking up research in thematic research areas. Such a partnership will result in setting up of a research centre at TIET over the next five years.

#### **6.3.2 Teaching and Learning**

Thapar University has setup a Centre for Academic Practices and e-learning (CAPSL) with an overarching aim to enable the shift to a new paradigm of teaching and learning. The new paradigm requires TU faculty to move from Teacher Centred Learning to Student Centred Learning, including alignment of understanding of the shift of both staff and students. The other objectives of the program are Continuous Professional Development (CPD) in academic practice and how this is related to the concept of growth as a teacher; Reflection on teaching and learning; and relationship to and importance of Scholarship of Learning and Teaching.

The program aims to embed and disseminate skills and pedagogies to support the teaching and learning culture at Thapar University, such as group work, active learning and reflective practice and evaluation.

100 faculty members completed five core workshops during 2016 namely (i) Student-Centred Learning (ii) Assessment (iii) Curriculum (iv) Outcomes Based Approach to Student Learning and (v) Sharing scholarship in teaching and learning. Each participant also completed at least two optional workshops during the course.

The participants were assessed by TCD on the basis of an assignment that integrates learning from all 5 workshops with the practical dissemination. The assignments were submitted individually by each participant online. Comprehensive feedback on submissions and the presentation was provided to participants and each participant was graded as Distinction or Satisfactory or Resubmit.

A showcase culmination event was held on January 11, 2017 and the top leadership team from both institutions was invited to participate. The participants made a group poster presentation in groups of 5 each. The poster ‘competition’ provided an excellent platform to participants to receive recognition of their work, to have to answer questions on it and engage in dialogue about it. It was a vibrant and positive process. This was followed by five brief presentations on pedagogical changes implemented by each group in their classes and a panel discussion. The successful participants were awarded certificates with a special recognition to 25 participants, who earned a distinction.

Successful completion of the ‘New Directions’ Programme is the pre-requisite for enrolment in the planned Special Purpose Certificate in Academic Practice (SPCert) to be established jointly by Trinity Teaching & Learning with Thapar University.

### **6.3.3 Examination and Evaluation**

Each department/School has constituted an Examination Board for each year of study. All the instructors teaching courses to that batch (defined by the year of admission) form the members of the board. An external member will be appointed only for the senior years of the UG program (one for Year 3 and another for Year 4) and the final year of the PG programs.

The course instructor prepared the question papers along with model solutions which were sent for review to Trinity every semester.

#### **Minimum Pass Marks**

It is important to realise that the marks in individual papers are essentially useful symbols for grading and ranking students in a course in a consistent and equitable manner. The present grading system of awarding grades based on total marks obtained by the students would be applicable as documented in the Academic Regulations approved by the Senate. However, for each individual course a minimum of 33 marks would be required to be obtained by the student to pass the course with the lowest pass grade. In all project based courses (those courses where no formal written examination is conducted (e.g. Project Semester, Engineering Design II or III) a minimum of 50 marks will be required to pass the course.

For the purpose of awarding grades, all students with marks less than 33 were awarded “E” (fail) grade. The normal distribution curve was used to award grades as per the existing regulations at TU. The minimum marks considered for assessing the normal distribution will be 33. This would mean all students at 33 will be automatically awarded “C-” grade and other grades will be awarded based on normal distribution. **The Examination Board is the highest body deciding on matters related to the examination results in a department/school.** The AVGP and other matters related to final grading is also its sole discretion.

#### **Spread sheet with provisional grades**

All the academic staff entered marks in the ERP system as is the current practice. The internal examiners also proposed a grade for each student considering the guidelines listed above. The DOCA office then prepared a spread sheet of the total marks obtained by each student along with the grades proposed by the internal examiner.

The Examination Board will review all the marks and may pass a student if he has up to two courses with no less than 30 marks and above 33 in all other courses. Similarly, the board may consider passing a student who has at least 27 marks in one course and more than 33 in all the remaining courses. All student results will be reviewed on a case by case basis. The Examination Board will also review the answer scripts on a sampling basis to check for consistency against the model solutions provided earlier.

#### **6.3.4 Research and Development**

As compared to the last few years, this year saw an increase in the research activities, wherein more funds were received for sponsored projects, higher number of Ph. D. students got registered and resource generation through consultancy also increased. Out of the sponsored projects received from various funding agencies (UGC, AICTE, DST and DOE, etc), 29 were completed during the year under review and 118 projects are ongoing and progressing towards their completion. 22 new projects were received during the year 2015-16. The total funding received during the year was Rs. 1041.67Lacs. During the year, 582 technical papers were published in reputed national and international journals listed in SCI/SSCI, and several research papers were presented/ published in conferences, seminars and workshops.

<b>Sponsored Projects</b>	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>
Received	21	22	27
Ongoing	127	118	109
Completed	18	29	38
Funds Sanctioned (Rs. in lakh)	466.35	1041.67	658.56

<b>Publications</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
Scopus	562	582	691
In other Journals	226	139	189
In seminars, conferences and workshops	160	224	179

#### **6.3.5 Library, ICT and physical infrastructure / instrumentation**

The Central Library TIET is housed in a centrally air conditioned spacious premises covering an area of 25,000 square feet. The central library is the core of academic services, and therefore, become a key place in academic and research activities. With its collection of over 89746 books, it provides the ready

to use information support to its users. Besides printed books and journals, central library collection includes e-Books, bound volume of journals, CD-ROMs, DVD, On-line databases, audio-video material, standards, specifications, theses, reports etc. The library collection consists of Textbooks, Reference Books, Book Bank, Encyclopaedias, Handbooks, Standards, etc in the field of all engineering discipline and sciences, and humanities.

Library remains open 24x7 throughout the year, even on gazette holidays. However, Essential services are available till 8:30 PM. Most of the library operations are automated. Library catalogue (OPAC) can be searched from anywhere and subscribed e-resources can be accessed from the Campus only.

The emphasis of the library is to provide personalized information services in terms of subject support, research support, and content delivery to target user with minimum time. The library services are fully automated with modern web based library management system with automatic alert system.

The Library offers the following facilities/services:

1. **Digital Resource Centre:** Digitization project of Library is in progress. First phase i.e. digitization of all the previous thesis is over. This laboratory also provides place for faculty and group of students for working on their library learning based assignments.
2. **Reading Facilities:** Three separate reading halls, including one exclusively for faculty and research scholars are available. In addition to these reading halls, reading space is available in the learner's zone, Community library and Print theses sections as well. Library has in all seating capacity for 350 readers.
3. **Community library** for the families of staff and faculty members is a part of Library, where books, newspapers and magazines for children, grownups, ladies and senior citizens are available and this section remains open from 08:00 A.M. to 08:30 PM on all the working days.
4. **Information and communication infrastructure:** The Library is equipped with state of the art facility which includes 200 nodes for Wi-Fi network in addition to wired connectivity. A number of computers are dedicated for library users. Resources like digital scanners, printers, photocopiers and surveillance system for security etc. are available.
5. **Online resources and services:** These can be accessed through its website <http://cl.thapar.edu>. the library also manages the University's digital archive Dspace@TIET which can be accessed at <http://dsapce.thapar.edu:8080/dspace>. All the dissertations and theses are now submitted to the University on Dspace@TIET. During the year 586 submissions were made on DSpace.
6. **Membership:** Library caters to faculty, staff and students of all the three institutions on the Campus. Students registered for Distance Learning course of University can also become members. Private local resident, professionals and institutions & industries and alumni of the university can also become member of Library on nominal fee.
7. **Document Delivery Service:** Research paper/articles which are not available in the subscribed e-journals and print journals are procured by the library on request through Document Delivery Service (DDS). Library interacts with other libraries and agencies as NISCAIR for procuring research articles.
8. **Library on Wheels:** To make faculty members and research scholars aware about 'Resources & Services @TIET Library' library conducts and organize presentations in different departments from time to time.
9. **Collection Development:** This year 8225 volumes of books were added to the collection. During the financial year 2013-14 Rs 31 lakh was spent on the purchase of books and Rs.70 lakh on subscription of print and e-journals.
10. **Library Hours:** Library remains open for 24 hours throughout the week. Library services are provided from 8 am to 8.30 pm from Monday to Saturday. During the examination, the library services are also made available on Sundays.
11. **Book Loans:** During the reporting year a total of 34226 books were loaned out to the members.

### **6.3.6 Human Resource Management**

The University has set high standards for imparting quality education and thus induct faculty with higher academic profiles, urge to excel in their respective fields and serve the students and the University with dedication and high quality standards. All the faculty members inducted are qualified and competent teaching in all the academic courses. The University does not recruit any faculty without PhD since 2010. Some of the faculty members recruited prior to this have been encouraged to register for PhD program at the University or other institutions of high repute. Most of these faculty members are at an advanced stage of completing their research work. The University has facilitated their work by giving them one to two semesters off on their request.

The University has established a Professional Development Allowance for a variety of academic activities for all levels and has encouraged faculty to participate in conferences, symposiums, workshops, training programs etc. The University provides seed money for organizing conferences and other faculty development programs to all academic units from time to time.

For the non teaching staff, the University has organized Computer proficiency up gradation programmes for to achieve the desired standards and all the ministerial staff has been trained to handle computers for the routine jobs. The non teaching staff has been motivated and the self development achieved can be gauged from the higher qualifications attained by its staff during the last five years.

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### **6.3.7 Faculty and Staff recruitment**

The largest constraint in the growth of higher education is the lack of faculty. The University makes special efforts for recruitment and retention of quality faculty. The desired profile of the faculty at all levels has been clearly defined. The positions are publicized widely through print and electronic media. Better qualified faculty members are encouraged to apply for various positions at TU. A meticulous process of evaluation that includes seminar presentation and personal interviews with a carefully chosen panel of experts is adopted. All full time positions offered are with Ph.D. degrees. To provide impetus to the effort and facilitate selection and induction of highly qualified faculty members at the entry and higher levels, we entertain applications throughout the year.

The University has set standards for imparting quality education and thus inducts faculties with high academic and research profiles, urge to excel in their respective fields and serve the students and the University with dedication and high quality standards. All the faculty members inducted are qualified and competent teachers in all the academic courses. We have made provision to recruit eminent persons of repute by invitation. The University has also made provisions to visit Institutions of high repute (IIT's/IISc) to attract and recruit faculty in the emerging areas.

Reputation and recognition of an academic institution largely depend on its faculty. We have some outstanding faculty with many national recognitions and laurels to their credit. The faculties have kept pace for disseminating knowledge, upgrading qualification, and publishing work in journals,



contributing to seminars/conferences, investigating research projects and taking up consultation projects. The Institute lays special emphasis on faculty search and recruitment. To provide impetus to the effort and facilitate selection and induction of highly qualified faculty members at the entry and higher levels, we entertain applications throughout the year.

In order to attract the best available talent at Thapar Institute, we have implemented several initiatives during the last few years:

- Research grant as seed money to young faculty (Rupees 500,000 one time grant)
- Excellent work environment free from red tape and unnecessary bureaucratic procedures
- The salaries are higher than other peer institutions at all levels
- Performance Incentive scheme for outstanding performers
- Professional development allowance to all faculty
- Laptops to each and every faculty member who joins the University during the year.

### ***Support of Faculty Professional Development***

The University has set high standards for imparting quality education and thus induct faculty with higher academic profiles, urge to excel in their respective fields and serve the students and the University with dedication and high quality standards. All the faculty members inducted are qualified and competent teaching in all the academic courses. The University does not recruit any faculty without PhD since 2010. Some of the faculty members recruited prior to this have been encouraged to register for PhD program at the University or other institutions of high repute. Most of these faculty members are at an advanced stage of completing their research work. The University has facilitated their work by giving them one to two semesters off on their request.

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For Thapar University, the processes used to evaluate and provide feedback about the performance of the faculty working with us is extremely important. If these evaluation processes are properly designed, these can help the University thrive by providing appropriate rewards and encouragement for good performers, and guidance about how to improve their performance to others. The existing evaluation processes for faculty did not appropriately make the distinction based on performance and may result in lower morale, engagement, and productivity. The University recognizes the importance of a faculty performance evaluation process that is fair and that provides productive and appropriate incentives to faculty. As a result, a new performance incentive scheme was designed to reward performers and encourage all others to improve their performance. No faculty performance review process can be free of issues or problems. Bearing this in mind, a committee was constituted to review the existing performance review system and recommend changes and policies to improve the process. The committee formulated a new Performance Incentive Scheme (PIS) that is more transparent and better understood, more equitable, and provide more useful feedback to faculty members. The implementation of this new scheme since last 5 years has enhanced morale, rewarded good performers, motivated and reinforced productive activity of faculty at Thapar University. The aim of the new evaluation process is to appropriately quantify the academic and research performance of all faculty members at Thapar University through a self-appraisal system wherein marks are awarded for pre-defined activities of a faculty during an academic year (July 1 to June 30 next year). The marks are awarded for all activities

of faculty which directly contribute to attain the documented quality policy and objectives of the University. The method is devised in a way so as to eliminate/reduce subjectivity of measuring performance of a faculty. The goal is to create a measure by which faculty can self-assess its performance. The good performers are rewarded with incentive for that year.

The faculty is requested to fill up an online form wherein he/she reports his/her academic (teaching) and research performance besides other services or co-curricular activities he/she had undertaken during the previous year. The teaching performance is judged on the basis of results of a Student Response Survey (SRS) form for each faculty and each subject. The students are required to fill up this form online. The results of the survey are used as a measure of teaching potential and quality of a faculty. The scores are compiled using customized software. Based on the SRS score obtained (given by students) a teaching score for all the subjects taught by the faculty during the two semesters is generated. The research scores are awarded by considering publications, research projects, and student guidance during the year. For all other activities undertaken by the faculty during the year, perception score is given by the reporting officers. The total marks obtained by each faculty are then tabulated and sorted in a descending order. In order to make the scheme broad based, the University gives incentive to about 55% of the faculty strength and those eligible are divided into four groups A, B, C and D. The group A is awarded up to a maximum of three months of additional salary for the year. The Group B, C and D are given 1.5 months, 1 month and 15 days additional salary respectively for the year. Following tables contains the details of faculty recruitment and internal promotions affected during this year.

#### New Appointments

S.No.	Name	Designation	Deptt.	Date
1.	Dr. Navdeep Kailey	Lecturer (Cont.)	SOM	1.7.2016
2.	Dr. Jolly Puri	Lecturer (Cont.)	SOM	1.7.2016
3.	Dr. Avleen Kaur	Lecturer (Cont.)	CSED	1.7.2016
4.	Mr. Ashutosh Aggarwal	Lecturer (Cont.)	CSED	1.7.2016
5.	Ms. Tarunpreet Bhatia	Lecturer (Cont.)	CSED	1.7.2016
6.	Dr. Husanbir Singh Pannu	Lecturer (Cont.)	CSED	1.7.2016
7.	Ms. Rupinderdeep Kaur	Lecturer (Cont.)	CSED	1.7.2016
8.	Ms. Sukhchandan	Lecturer (Cont.)	CSED	1.7.2016
9.	Ms. Anika	Lecturer (Cont.)	CSED	1.7.2016
10.	Mr. Shatrughan Modi	Lecturer (Cont.)	CSED	1.7.2016
11.	Mr. Ashish Girdhar	Lecturer (Cont.)	CSED	1.7.2016
12.	Ms. Rajanpreet Kaur	Lecturer (Cont.)	CSED	1.7.2016
13.	Ms. Harkiran Kaur	Lecturer (Cont.)	CSED	1.7.2016
14.	Dr. Amit Munjal	Lecturer (Cont.)	ECED	1.7.2016
15.	Ms. Gaganpreet Kaur	Lecturer (Cont.)	ECED	1.7.2016



16.	Mr. Atul Sharma	Lecturer (Cont.)	MED	1.7.2016
17.	Ms. Anu Mittal	Lecturer (Cont.)	MED	1.7.2016
18.	Mr. Raju	Lecturer (Cont.)	CED	1.7.2016
19.	Ms. Mansha Swami	Lecturer (Cont.)	CED	1.7.2016
20.	Ms. Sangita Roy	Lecturer (Cont.)	CSSED	1.7.2016
21.	Mr. Gagandeep Singh	Lecturer (Cont.)	ECED	1.7.2016
22.	Ms. Madhu Kushwaha	Lecturer (Cont.)	ECED	1.7.2016
23.	Dr. Ravi Panwar	Assistant Professor	ECED	5.7.2016
24.	Mr. Atanu Das	Lecturer (Cont.)	MED	11.7.2016
25.	Dr. Davinder Kumar	Lecturer (Cont.)	SCBC	11.7.2016
26.	Dr. Mily Bhattacharya	Lecturer (Cont.)	SCBC	11.7.2016
27.	Dr. Sumit Vyas	Lecturer (Cont.)	ECED	14.7.2016
28.	Dr. Sunil Devi	Assistant Professor	SPMS	14.7.2016
29.	Ms. Navdeep Kaur	Lecturer (Cont.)	EIED	15.7.2016
30.	Mr. Jitender	Lecturer (Cont.)	EIED	15.7.2016
31.	Mr. Tapas Choudhary	Lecturer (Cont.)	EIED	15.7.2016
32.	Mr. Chandrakant Tiwari	Lecturer (Cont.)	EIED	15.7.2016
33.	Mr. Shailesh Kumar	Lecturer (Cont.)	EIED	15.7.2016
34.	Mr. Shailendra Tiwari	Lecturer (Cont.)	CSSED	15.7.2016
35.	Mr. Ruhul Amin	Lecturer (Cont.)	CSSED	18.7.2016
36.	Dr. Mohd. Naseem	Lecturer (Cont.)	CSSED	18.7.2016
37.	Dr. Ashok Kumar Pradhan	Lecturer (Cont.)	CSSED	18.7.2016
38.	Mr. Harshvardhan N.	Lecturer (Cont.)	MED	18.7.2016
39.	Dr. Sahil Bansal	Lecturer (Cont.)	CED	18.7.2016
40.	Mr. Reema Goyal	Lecturer (Cont.)	CED	18.7.2016
41.	Mr. Rajvir Singh Chauhan	Lecturer (Cont.)	SOM	18.7.2016
42.	Dr. Ram Niwas	Lecturer (Cont.)	SOM	19.7.2016
43.	Mr. Sukhpal Singh	Lecturer (Cont.)	CSSED	19.7.2016
44.	Dr. Seemu Sharma	Lecturer (Cont.)	CSSED	19.7.2016
45.	Mr. Gurpal Singh Chhabra	Lecturer (Cont.)	CSSED	19.7.2016
46.	Dr. Sanjeev Kumar Aggarwal	Assistant Professor	EIED	21.7.2016

47.	Mr. Navneet Sharma	Lecturer (Cont.)	ECED	21.7.2016
48.	Mr. Shivendra Shivani	Lecturer (Cont.)	CSED	25.7.2016
49.	Dr. Vinay Gautam	Lecturer (Cont.)	CSED	25.7.2016
50.	Ms. Nisu Jain	Lecturer (Cont.)	SOM	25.7.2016
51.	Ms. Isha Dhiman	Lecturer (Cont.)	SOM	25.7.2016
52.	Dr. Sujeet Pratap	Lecturer (Cont.)	SHSS	25.7.2016
53.	Mr. Nitin Saxena	Lecturer (Cont.)	CSED	26.7.2016
54.	Ms. Geetika Dua Sagoo	Lecturer (Cont.)	ECED	28.7.2016
55.	Dr. Hari Shankar Singh	Assistant Professor	ECED	1.8.2016
56.	Ms. Shivani Sahdev	Lecturer (Cont.)	SHSS	1.8.2016
57.	Dr. Deepa Mudgal	Lecturer (Cont.)	MED	1.8.2016
58.	Ms. Amita Kumari	Lecturer (Cont.)	EIED	1.8.2016
59.	Mr. Rohit Kumar Singla	Lecturer (Cont.)	MED	1.8.2016
60.	Ms. Rajni	Lecturer (Cont.)	SHSS	4.8.2016
61.	Mr. Pramod Kumar Vaishnav	Lecturer (Cont.)	SOM	8.8.2016
62.	Dr. Tamanna Chhabra	Lecturer (Cont.)	CSED	8.8.2016
63.	Mr. Richik Kashyap	Lecturer (Cont.)	ECED	10.8.2016
64.	Ms. Shweta Dogra	Lecturer (Cont.)	SHSS	19.8.2016
65.	Dr. N.K. Sharma	Visiting Professor	SHSS	22.7.2016
66.	Dr. A.K. Chatterjee	Visiting Professor	ECED	16.8.2016
67.	Dr. Ashish Purohit	Assistant Professor	MED	16.9.2016
68.	Dr. Sandeep Kumar	Assistant Professor	MED	28.11.2016
69.	Cmde(Retd.) Anil Kumar Sharma	Visiting Professor	ECED	28.11.2016
70.	Dr. Manash Chakraborty	Visiting Assistant Professor	CED	26.12.2016
71.	Dr. Sunita Mehta	Lecturer (Contractual)	SPMS	9.1.2017
72.	Mr. Sandeep Singh	Lecturer (Contractual)	MED	18.1.2017
73.	Dr. Ashish Kumar	Lecturer (Contractual)	SCBC	2.1.2017
74.	Dr. Mily Bhattacharya	Lecturer (Contractual)	SCBC	2.1.2017
75.	Dr. Davinder Kumar	Lecturer (Contractual)	SCBC	2.1.2017
76.	Dr. N.K. Verma	Visiting Professor	SPMS	2.1.2017

77.	Dr. N.K. Sharma	Visiting Professor	SHSS	20.1.2017
78.	Dr. Sujeet Pratap	Lecturer (Contractual)	SHSS	2.1.2017
79.	Ms. Shweta Dogra	Lecturer (Contractual)	SHSS	2.1.2017
80.	Dr. Rajni	Lecturer (Contractual)	SHSS	2.1.2017
81.	Dr. Deepa Mudgal	Lecturer (Contractual)	MED	2.1.2017
82.	Dr. Ashutosh Sharan Singh	Lecturer (Contractual)	SCBC	12.1.2017
83.	Dr. Gudveen Sawhney	Lecturer (Contractual)	SPMS	2.1.2017
84.	Mr. Pramod Kumar Vaishnav	Lecturer (Contractual)	SHSS	2.1.2017
85.	Ms. Nisu Jain	Lecturer (Contractual)	SOM	2.1.2017
86.	Mr. Gurpreet Singh Saini	Lecturer (Contractual)	MED	2.1.2017
87.	Dr. Bholu Ram Yadav	Lecturer (Contractual)	SEE	2.1.2017
88.	Dr. Sukhpal Singh	Lecturer (Contractual)	CSSED	2.1.2017
89.	Dr. Seemu Sharma	Lecturer (Contractual)	CSSED	2.1.2017
90.	Dr. Vinay Gautam	Lecturer (Contractual)	CSSED	2.1.2017
91.	Mr. Gural Singh Chhabra	Lecturer (Contractual)	CSSED	2.1.2017
92.	Ms. Swati Kumari	Lecturer (Contractual)	CSSED	2.1.2017
93.	Mr. Hemant Sharma	Lecturer (Contractual)	LMTSM	2.1.2017
94.	Dr. Banibrata Maity	Visiting Asst Prof	SCBC	1.6.2017
95.	Mr. Sukwinder Singh	Visiting Asst Prof	ECED	1.6.2017
96.	Mr. Sahaj Saxena	Visiting Asst Prof	EIED	1.6.2017
97.	Mr. Rajendra Kumar	Visiting Asst Prof	MED	1.6.2017
98.	Mr. Anuj Kumar	Visiting Asst Prof	SOM	1.6.2017
99.	Mr. Santosh Kumar Yadav	Visiting Asst Prof	ECED	6.6.2017
100.	Mr. Vipin Chandra Pal	Visiting Asst Prof	EIED	7.6.2017
101.	Mr. Sunil Kumar	Visiting Asst Prof	ECED	13.6.2017
102.	Mr. Sayan Sadhu	Lecturer (Contr)	MED	23.6.2017

TIET has also instituted a scheme for award of excellence in Teaching; Academic Research; Projects/Consultancy and Contributions to University Activities. While award for excellence in Teaching is given to 10% of the faculty members, 5% of faculty members get excellence award in Project/Consultancy and other 5% get in Academic Research. There are six awards for University Contributions. These awards are divided into three categories A, B and C. Category A award carries an

amount of Rs. 1.5 lacs, Category B carries an amount of Rs. 1.0 lacs and Category C carries an amount of Rs. 0.75 lac. These awards are given annually.

### 6.3.8 Industry Interaction / Collaboration

S. No	Name	Activity
1.	Secure Net Technologies	Set up "centre of excellence " , running various courses on security such as security-5, network-5, ECSS & CEH
2.	Wipro Technologies	WIPRO is running various courses to upgrade the overall skills of teachers of engineering institutions as well as the students through two programs named as Wipro mission 10X technology Learning Center (MTLC) and Unified Technology Learning Platform (UTLP). Department has conducted one training program under this relationship.-2013
3.	Crompton Greaves Ltd.	<p>One ongoing project -"PREPARATION AND CHARACTERIZATION OF POLYMER/CERAMIC FIBRE AND CELLULOSE COMPOSITE PAPER FOR ELECTRICAL INSULATION" by Dr Rajeev Mehta</p> <p>One more projects has been started. Project was initiated by Dr. Gangacharyulu.</p> <p>Each year ME/MTech students are sent to CG for one year project training. This year Six MTech Students are sent for one year project training-June 2013.</p>
4.	ISA Group Lille, FRANCE	<p>Student Exchange and Faculty Exchange with Biotechnology Department. The activity will co-ordinated by Dr. Abhijit Ganguli. Scholarship for more than 100 students from Indian and French Govt.</p> <p>One faculty had gone Group Lille, France during the summer vacation to deliver a lecture on academic and research exchange programmes at TIET</p> <p>Attended two meeting/discussion sessions on environmental Food Biotechnology with Prof. Bertrand, Head Environmental Group.</p> <p>Initiatives on Joint Research Projects in the area of Bio-Process and Green Polymer Application for Remediating Environment.</p> <p>One TIET student Mr. Jatin Sharma BTech BT (4th Year) has been selected for Masters in Food Science and Management at ISA. Scholarship will be offered to the student.</p>
5.	University of Waterloo, Canada	<p>Dr. S. Bedi from UW visited TIET for two months and delivered 10 lectures on CAD / CAM/ Design</p> <p>Fresh MoU signing has been initiated. Dr KK Raina, Director, Dr S K Mohapatra, Dean of Academic Affairs and Dr. Ajay Batish HMED visited UWO in Sept. 2013</p>
6.	TCS PhD Research MoU	<p>TCS is sponsoring selected PhD Candidates for a Maximum of 4 years. Department currently have 3 TCS Research Scholars.</p> <p>A Stipend of Rs. 23,000 per month is given for the First 2 Years and</p>

S. No	Name	Activity
		<p>Rs. 25,000 per month for next 2 years by TCS.</p> <p>TCS supports participation of TCS Research Scholar and respective guide in 1 International Refereed Conference, held outside India, and 2 National Conferences in India.</p> <p>TCS awards One-time Rs 1 Lakh Contingency Amount to the Institute for every TCS Research Scholar to meet any incidental expenses.</p> <p>TCS also has a detailed plan for continuing interaction between TCS Research Scholars and TCS Innovation Labs.</p>
7.	CISCO Net Academy	<p>A global education initiative from Cisco Systems, offers networking programs, like the (Cisco Certified Network Associate) CCNA and (Cisco Certified Network Professional) CCNP courses, which prepare students for the certification exams of the same name, and other computer-related courses.</p> <p>150 students got their modules cleared and attained discounts to appear in CCNA industrial exam.</p>
8.	EC-Council, USA	<p>EC-Council Academia is an innovative education initiative that delivers information and security skills to improve career and economic opportunities around the world. It provides online courses, assessment exams, CBT videos and lab activities via iPrep, iVideo, iExam, iLearn and iLabs platform. It also prepares candidates for industry leading EC-Council certifications exams such as CEH, CHFI, ECSA/LPT.</p> <p>5 students successfully completed CEH exam and have attained Certified Ethical Hacker Certification from EC-Council USA</p>
9.	Microsoft Edvantage Program	<p>Under Microsoft Edvantage program, all Faculty and staff members can use latest legal software provided by Microsoft.</p> <p>The faculty members have the benefit of using all Microsoft products and keys from this website.</p>
10.	Oracle Academy	<p>Under this program CSED, received licensing to Oracle Database products on huge discount, also learning material is freely downloadable.</p> <p>Students can appear for Oracle certification at discounted price</p>
11.	Apple University Program	<p>CSED started with Course on Mobile Application development which emphasizes app development under android and iOS platform.</p> <p>CSED received free SDK (Software Development Kit) and are part of AUP for uploading apps developed by students after testing done by Appstore.</p>
12.	IBM University Program	<p>CSED is part of this program since 2005 and faculty, students have gained knowhow into IBM technologies by attaining certifications and training from IBM free of cost,</p> <p>10 faculty members and students were trained under this program for</p>

S. No	Name	Activity
		Rational Software Architecture (RSA)
13.	Infosys Campus Connect	<p>Launched by Infosys in May 2004, CC is a unique academia-industry initiative to “architect the education experience”.</p> <p>Goal is to build a sustainable partnership with engineering education institutions in India and abroad for mutual benefit; producing “industry ready” recruits.</p> <ul style="list-style-type: none"> <li>• Around 800 students got professional benefits from such training.</li> <li>• CSED has got critical inputs on Curriculum changes</li> <li>• Planning to Set up of Centre excellence in thrust areas of CS (initial proposal is being prepared)</li> </ul>
14.	Naveen Jindal School of Management, the University of Texas at Dallas, U.S.A and LM Thapar school of management -2013	Faculty and Student exchange, Joint research
15.	Association of chartered certified accountants (ACCA)-2013	The purpose of MoU is to have the international certifications from ACCA in finance and management programmes. With these certifications the profile of the students will be enhanced and they will get more acceptability in the market
16.	INTEL	<p>Intel® Embedded University Program (IEUP) caters to Enhance the Presence Of Intel® Embedded-based Systems Curriculum and to Enable Technology Leaders of Tomorrow an Understanding of Embedded Systems and Provide a Solid Foundation for Designing And Developing new Technologies.</p> <p>This Program supports in Curriculum Development, Student Contests, and Research. It holds an Annual Research and Education Summit giving Professors opportunities to interact with Peers, Intel Architects and Engineers.</p> <p>Following Equipment's were Funded by Intel under this program IXP1200 NP (2), IXP2400 NP (2), IXP425 (2) Kits.</p>
17.	University of Twente, Netherlands	To initiate a pilot bachelor student exchange program, establishing a joint research center on Entrepreneurship and Innovation between the Netherlands Institute of Knowledge Intensive Entrepreneurship (Nikos) of the University of Twente and the LM Thapar School of Management of TIET.
18.	Ritsumeikan University, Japan	Exchange information on research and educational programmes, to jointly organize short-term continuing education programmes, seminars, conferences, or workshops to exchange, on a reciprocal basis, faculty and students for limited periods of time for the purpose of education and /or research.
19.	University of Missouri-Kansas City	Joint Research Proposals, • Joint Research Guidance at PG and PhD level, • Joint conduct of workshops on upcoming areas of technology

S. No	Name	Activity
		Hybrid International Master of Science in Computer Science Program.  Dr Kevin Truman, Dean of the University visited TIET in 11th Sept 2013.  Visit to University of Missouri-Kansas City is being planned to further look into the courses.
20.	Engg. School of Information and Digital Technology, Paris, (EFREI ) FRANCE.	Student and faculty exchange as well as scholarships and waivers for the students for the Master programme at EFREI.
21.	Royal Melbourne Institute of Technology	Mapping of Bachelor Information Technology and Bachelor of Technology (computing Studies) with TIET program as 3+1 and 3+2 arrangement * Mapping of MCA programs and development of an agreement in BIT and BT Computing studies) and MCS
22.	NVIDIA for CUDA teaching center(CTC) as well as CUDA Research Center (CRC).	NVIDIA is a pioneer in parallel computing architecture using CUDA programming.  <ul style="list-style-type: none"> <li>- Hardware infrastructure required for the task procured</li> <li>- - CUDA teaching centre approved for TIET</li> </ul>
23.	Spoken Tutorial IIT-Bombay and MHRD	Workshops, certifications and training on upcoming technologies
24.	ICICI	Trinity is an initiative by ICICI Bank that promotes and furthers the cause of innovation and entrepreneurship amongst the youth community in India.
25.	Trinity College Dublin-Ireland	Thapar Institute of Engineering & Technology University Patiala (TIET P) and Trinity College Dublin (TCD) have collaborated in areas of mutual interest of both the institutions. The broad scope of this collaboration would jointly develop a contemporisation program for Thapar Institute of Engineering and Technology University covering broadly the following areas. Academic curriculum review and development  <ul style="list-style-type: none"> <li>• Research Orientation including supporting lab infrastructure.</li> <li>• Pedagogy (including teaching-learning center)</li> <li>• Governance Structure</li> <li>• Physical Infrastructure</li> <li>• Faculty training and development</li> <li>• Develop programs in Humanities and Liberal Arts etc</li> </ul>
26.	DRDO-Institute of Nuclear Medicine and Allied Sciences, Delhi	Exchange of researchers, scholarly and pedagogical material, collab. In research programs, pilot UG/PG exchange program for project work
27.	PGI Chandigarh	Recognizing the importance of research and development in the areas of biomedical science , engineering and technology

S. No	Name	Activity
28.	University of Groningen	<p>The Parties agreed on the following areas of Entrepreneurship, Innovation and Psychology:</p> <p>a) to exchange, on a reciprocal basis, faculty and students for limited periods of time for the purpose of education and /or research.</p> <p>b) to exchange knowledge, faculty and academic staff for short-term and, as funding and other circumstances permit, longer-term projects and visits.</p> <p>c) to exchange information on research and educational programmes,</p> <p>d) to exchange information on teaching, learning material and other literature relevant to their educational and research programmes,</p> <p>e) to explore over time other international partnership activity to be defined.</p>
29.	Tel Aviv University	<ol style="list-style-type: none"> <li>1. Explore options for a 2+2 program at undergraduate level or similar programs at postgraduate level in Engineering and Life Sciences. One such program currently under discussion is International Program in Electrical Engineering.</li> <li>2. Examine possibility of developing an undergraduate engineering program in Systems Engineering</li> <li>3. Encourage student to participate in TAU's Summer programs in Cyber, IP, Innovation and Entrepreneurship and Food security etc.</li> <li>4. Explore mobility of staff and students for education and /or research including Joint supervision of PhD students.</li> <li>5. Enable joint research proposals to external funding agencies.</li> <li>6. Use TAU's expertise in Clinical/Cognitive psychology program to strengthen TU's MA Psychology program.</li> <li>7. Promote post-doctoral fellowships for Thapar faculty at TAU.</li> <li>8. Explore options for one/two semester exchange for the BE-MBA integrated program at the master's level when the students move for their MBA program with Porter School of Management.</li> <li>9. Jointly propose and engage in research or training programmes sponsored by funding agencies, and to invite each other's faculty to participate therein.</li> </ol>

### 6.3.9 Admission of Students

The complete admission schedules are advertised in the leading National Dailies and magazines well in advance and repeating the advertisements two to three times before the counselling sessions. The schedule is also simultaneously displayed on the Website of the University. The queries of the aspirants are handled telephonically and through email promptly. The transparency is achieved by displaying the data and results of applicants and those short listed on the University Website. Merit lists are also displayed on the Notice Board based on the Counselling conducted publicly. Full transparency is ensured at levels by the Thapar Institute of Engineering and Technology University management.

#### ADMISSION TO THE BE/BTECH PROGRAMME



The candidate has passed 10+2 or equivalent examination with at least 60% marks (55% for SC/ST candidates) in aggregate of three subjects, namely, Physics, Mathematics and any one subject out of Chemistry, Biology, Biotechnology and Computer Science OR Minimum 60% (55% for SC/ST) marks in a Diploma recognized by AICTE or a state board of technical education of at least 3-year duration. (ii) has secured at least 20% aggregate marks (15% for SC/ST candidates) in JEE (Main)-2016. This clause shall not be applicable for the PGN, GoI, JKM, JK students & N-E students OR

has passed 10+2 or equivalent examination with at least 80% marks (75% for SC/ST candidates) in aggregate of three subjects, namely, Physics, Mathematics and any one subject out of Chemistry, Biology, Biotechnology and Computer Science. (ii) has secured at least 15% aggregate marks (10% for SC/ST candidates) in JEE (Main)-2016. This clause shall not be applicable for the PGN, GoI, JKM, JK students & N-E students

The admission shall be made on the basis of merit of score in JEE (Main)-2016. The first five toppers of the recognized Boards of India in the examinations held in 2016, shall be given direct admission to the first year of UG program, with the condition that they must have appeared in JEE (Main)-2016 but the entrance test score of such students shall not be required for admission. They shall be allocated branch of their choice. Such candidates shall have to furnish proof of being toppers from their respective boards. Tuition fee shall also be waived off for such students provided they maintain minimum CGPA of 8.50 in subsequent semesters. Only toppers having first five positions among science stream (NonMedical) at 10+2 of a respective board shall be considered

## ADMISSION TO THE POST GRADUATE PROGRAMMES

### PhD PROGRAMME

A candidate seeking admission to the degree of Doctor of Philosophy must have obtained ME/MTech/MPhil/MCA/MSc/MA/MBA/CA or equivalent with minimum CGPA of 6.00 on a 10 point scale or 55% marks in aggregate where marks are awarded or NET (UGC/CSIR) qualified. Candidates are admitted on the basis of merit of Entrance Test and Interview conducted by the University. The candidates who secure minimum of 20% marks in the written exam are only be called for Interview. During interview, a candidate is required to indicate area of research. Relaxation for appearing in the Entrance Test may be given by the University to those candidates who have qualified UGC/CSIR (JRF).

### ME/MTech PROGRAMME

Admission to all the ME/MTech programmes shall be made on the basis of valid GATE Score in respective discipline. First preference will be given to GATE qualified candidates and who have obtained at least 60% (55% for SC/ST) marks in the aggregate in the qualifying examination from a recognised University.

### MCA PROGRAMME

The admission to the MCA program is made on the merit of the entrance test conducted online by the University across India. To be eligible for admission the candidate must have a recognized bachelor degree of minimum 3 years duration in any discipline with at least 60% marks (55% for SC/ST) in aggregate. Mathematics must be studied at 10+2 level or at graduation level.

### MSc PROGRAMMES

Admissions in all the M.Sc. programs shall be made on the basis of merit prepared by giving 40% weightage to 12th marks and 60% weightage to Graduation marks (aggregate marks upto pre-final year). Overall minimum 60% (55% for SC/ST) in graduation shall be required to be eligible for admission. Graduation must be done from a recognized University

Detailed information about all the programmes and the admission process can be accessed at [www.thapar.edu](http://www.thapar.edu)

6.4 Welfare schemes for

Teaching	Yes
Non teaching	Yes
Students	Yes

6.5 Total corpus fund generated

As on July, 2017 the corpus fund of INR 3,57,694,623 is available

6.6 Whether annual financial audit has been done

Yes

☒

No

☐

6.7 Whether Academic and Administrative Audit (AAA) has been done?

Audit Type	External		Internal	
	Yes/No	Agency	Yes/No	Authority
Academic	Yes (ISO9000)	STQC	Yes	IQAC
Administrative	Yes (ISO 9000)	STQC	Yes	Internal Audit

6.8 Does the University/ Autonomous College declare results within 30 days?

For UG Programmes

Yes

☒

No

☐

For PG Programmes

Yes

☒

No

☐

## **6.9 What efforts are made by the University/ Autonomous College for Examination Reforms?**

### **Procedure to establish regulations governing Examination Board**

#### **Introduction**

This document contains information about the regulations governing examinations, as well as the conventions determining the award of grades in examinations, in the engineering degree programmes.

All students at Thapar University undertake a set number of credits during each year of the undergraduate degree programme. Each course has an individual weight reflected by assigning some credits, the amount dependent on the level of effort involved. As of now, TU has not defined any minimum marks in order to pass in each course during the semester examinations whereas at Trinity the students must have achieved at least 40% in individual courses worth at least in 50 out of 60 credits offered during the year and have an overall average mark of at least 40%. Further, at Trinity the student must have either not more than 10 course credits with marks of at least 35% and less than 40% or not more than 5 course credits with marks of at least 30% and less than 40%. Some courses like ours are assessed entirely on the basis of continuous assessment and it is not possible to take a supplemental examination in these cases.

Students who fail the annual examination can take an auxiliary examination in all courses in which they have not met the requirements.

This procedure outlines changes proposed in the examining process from July 2015 onwards. This procedure when approved will be applicable from the batch to be admitted in July 2015.

#### **Functioning of the Examination Board and the Court of Examiners**

Each department/School will have an Examination Board which will consist of at least one external member for each year of study to begin with. All the instructors teaching courses to that batch (defined by the year of admission) will form the other members of the board. Subsequently, the external member will be appointed only for the senior years of the UG program (one for Year 3 and another for Year 4) and the final year of the PG programs.

The concerned instructor for each course will prepare the question paper along with model solutions and will give it to a faculty colleague from the cognate area who countersigns it by verifying the questions and solutions provided. The same will then be sent for review to the external examiner. This will be done much in advance as the outside expert may require 4 – 6 weeks for completing the review of the question papers (and solutions) and give his/her feedback.

#### ***Minimum Pass Marks***

It is important to realise that the marks in individual papers are essentially useful symbols for grading and ranking students in a course in a consistent and equitable manner. The present grading system of awarding grades based on total marks obtained by the students would be applicable as documented in the Academic Regulations approved by the Senate. However, for each individual course a minimum of 33 marks would be required to be obtained by the student to pass the course with the lowest pass grade. In all project based courses (those courses where no formal written examination is conducted (e.g.

Project Semester, Engineering Design II or III, Capstone Project) a minimum of 50 marks will be required to pass the course.

For the purpose of awarding grades, all students with marks less than 33 will be awarded “E” grade. The conditions for review of marks and conventions therein are described above. The normal distribution curve will be used as far as possible to award grades as per the existing regulations at TU. The minimum marks considered for assessing the normal distribution will be 33. This would mean all students at 33 will be automatically awarded “C” grade and other grades will be awarded based on normal distribution.

### ***Court of Examiners***

Each department will have its own court of examiners for each year of study in undergraduate programs. Another committee will be formed for the postgraduate programs. For example, each department will have four undergraduate courts of examiners and one postgraduate court of examiners. These will be designated as under:

1. Court of Examiners \_ (*Abbreviation of the department/school*) – Year 1
2. Court of Examiners \_ (*Abbreviation of the department/school*) – Year 2
3. Court of Examiners \_ (*Abbreviation of the department/school*) – Year 3
4. Court of Examiners \_ (*Abbreviation of the department/school*) – Year 4

The meetings of the court of examiners will be chaired by the respective Head of Departments/Schools and will have all internal examiners (course instructors) or competent deputies who were involved in teaching the courses offered to that batch (year of study) as members. The Controller of Examination or his nominated member will be a permanent invitee to all meetings of the court of examiners to maintain consistency.

**The Court of Examiners will be the highest body deciding on matters related to the examination results in a department/school.** The AVGP and other matters related to final grading will be sole discretion of the court of examiners.

### ***Spread sheet with provisional grades***

All the academic staff will enter the marks in the ERP system as is the current practice but will not publish or lock the marks. The internal examiners will also propose a grade for each student considering the guidelines listed above. The office of the Controller of Examination will prepare spread sheet of the total marks obtained by each student in a department for each year of study along with the grades proposed by the internal examiner as per the format given below:

<b>Examination Mark Sheet: Mechanical Engineering Department – Year</b>														
Academic Year		2016-17										Date:		
Regd No	Student Name	Subject Code		Subject Code		Subject Code		Subject Code		Subject Code		Subject Code		Remarks
		Marks obtained	Proposed Grade	Marks obtained	Proposed Grade	Marks obtained	Proposed Grade	Marks obtained	Proposed Grade	Marks obtained	Proposed Grade	Marks obtained	Proposed Grade	
<b>Mean</b>														
<b>Minimum</b>														

<b>Maximum</b>														
<b>Std Dev</b>														
<b>Failure rate (%)</b>														
<b>AVGP</b>														

The spread sheets will be sent to the departments for discussion in the meeting of the Court of Examiners.

Marginal cases, say when the marks obtained are 30 or lower, the instructor is definite that this student should fail. If the examiner considers the paper to be marginal, a mark of 31 or above but lower than 33 (which will be regarded as provisional) would be left to the discretion of the Court of Examiners, based on the overall examination performance of the student, to decide whether to raise the mark to 33 or leave it as it is. Examiners and students alike must accept that these marks, close though they may be in an arithmetic sense, symbolise very different things and will normally have very different consequences for an individual student's overall examination result. The Court of Examiners (which will include at least one external member) will review all the marks and may pass a student if he has up to two courses with no less than 30 marks and above 33 in all other courses. Similarly, the board may consider passing a student who has at least 27 marks in one course and more than 33 in all the remaining courses. All student results will be reviewed on a case by case basis with concurrence of the external examiner in each department. The external examiner will also review the answer scripts on a sampling basis to check for consistency against the model solutions provided earlier.

The Court of Examiners will meet twice a year for the purpose of confirming marks and awarding examination grades. It comprises all those teaching in the degree programmes, including staff members from outside the immediate Schools/Departments. The Court of Examiners is designed to facilitate fair and efficient Courts of Examiners meetings by minimising the need for discussion of relatively straightforward cases.

TU proposes to use TCD's services for getting the question papers reviewed at least for the next three years.

### ***Final CGPA Calculations with examples***

The CGPA at the end of the each semester will be rounded off to next tenth decimal place as a default setting on student result transcripts. For example, if the student obtains the following CGPA at the end of each semester, his final transcript will show the rounded off number at the tenth decimal place. See the example, for student X:

<b><i>Name of the student: X</i></b>		
<b>Semester /Term</b>	<b>CGPA</b>	
	<b>Actual</b>	<b>Rounded off</b>
I	6.92	6.92
II	7.16	7.20
III	7.08	7.10
IV	6.96	7.00
V	7.45	7.50
VI	7.62	7.62
VII	7.88	7.90

VIII	7.97	8.00
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### **Role of the External Examiner**

The presence of external examiners will provide an opportunity for TU faculty to have an outside view expressed to them about the content, organisation, and examining of their courses. It should provide an opportunity for wide-ranging discussions about how courses may best evolve in the context of the particular discipline as it develops. Otherwise, the chief responsibilities of external examiners are to ensure that

- academic standards are maintained;
- the regulations governing examining are observed;
- individual students are treated fairly.

The membership of the Court of Examiners for each course of study should include at least one external examiner.

In order that external examiners can carry out their duties properly, Heads of Department and Program Coordinators in each Department should ensure the following:

- details about the aims, objectives, and structure of courses together with module outlines and learning outcomes should be sent to external examiners during the first two weeks of the beginning of the semester during every academic year;
- external examiners to be provided with the marking scheme and any other related information about the course(s) in respect of undergraduate courses
- all draft final examination papers to be sent to the external examiners for their comments and approval by the sixth week of the semester
- external examiners to be provided with the TU practices in relation to marking and other assessment work;
- external examiners to be given access to all scripts and all assessment work that they wish to see;
- external examiners to add their initials to all pieces of work they have seen;
- only in exceptional circumstances should external examiners be asked to mark scripts;
- where a selection of work is made, it should give external examiners enough evidence to make judgments about the standards, propriety and consistency of the examining;
- where an oral examination is held for some or all of the candidates, the principles of selection of the candidates and the form of the examination should be agreed with external examiners;
- external examiners to attend in each academic year one meeting every semester of the examining board of which they are members;
- the above rules need not apply in the case of auxiliary examinations, but in any contentious cases external examiners to be consulted.
- where there is disagreement over marks or classification between the external examiner and the internal examiners, the view of the external examiner will normally prevail. The Court of Examiners is the final decision-making body.
- discuss about the conduct of the courses and any of the issues arising during the examining process with the appropriate internal examiners at TU. For this purpose, the external examiner

may decide to meet with the internal examiner(s) either individually or in groups (based on sub-stream) for wider discussion and feedback.

### **Reports by the External Examiner**

#### **(a) *Semester Assessment Report***

External examiners will be requested to submit an Semester assessment Report following the completion of the semester examination session to the Director. A form will be provided for this and the report shall be discussed in the meetings of the Review Committee set up for monitoring the progress of the Comtemporization Program. The copies of the report shall also be made available to the Deputy Director(s), Deans, CoE and the respective Heads of Departments or Schools.

#### **(b) *Final Report***

At the end of their term of office, which will be usually three years, external examiners will be requested to submit a Final Report to the Director to provide general feedback on

- the quality of the candidates, the pass rates, and the distribution of results in terms of degree classes;
- the marking schemes and assessment procedures;
- the syllabus, organisation of courses, and pedagogy.

#### **(c) *Discussion of Reports of External Examiners at Departmental meetings***

Heads of Departments/Schools will ensure that copies of reports from external examiners are circulated in advance and discussed at Departmental faculty meetings. Following this discussion, the respective Heads will forward a written response or acknowledgement, where appropriate, to the external examiner as soon as possible.

### **Recheck, Appeal and Transcript of Results**

#### **(a) *Retention of Scripts***

Examination answer scripts shall be held by examiners for a period of 12 months. This period of 12 months begins on the day of publication of the relevant examination results. Scripts cannot be released to students, but students may read their own scripts in the presence of the relevant examiner as is the existing practice.

#### **(b) *Re-checks and Re-marks***

Students are entitled to discuss their performance with examiners when they read the answer scripts in the presence of the examiner(s) who may revise the marks if necessary and record on top of the answer script.

#### **(c) *Appeals***

Students may appeal a decision of the Court of Examiners. The grounds for appeal must fall under one or more of the following categories: (i) the case of the student is not adequately covered by the normal TU academic regulations, (ii) the academic regulations were not properly applied in the student's case. Appeals in the first instance must be made to the Head of the Department/School who will form an Appeals committee consisting of examiner(s) or others as may be necessary. The Appeal Committee will meet to hear such appeals within two weeks of the publication of results, it is imperative that



students, or authorised and adequately briefed deputies, are present to obtain and consider results as soon as they become available. Appeals can be made in writing or email to the Head of the Department/School.

### **Role of Instructors as Examiners**

Apart from the duties described above, instructors have a number of other important responsibilities in relation to examination procedures. The main ones are as follows.

- Where a test/project/assignment counts towards the final mark, this fact must be made known to students before the end of the second week of the teaching the course in question. The extent to which it is taken into account and the penalties that attach to non-submission or late submission of such work should all be made clear to the students as early as possible, and not later than the end of the second week of the teaching the course in question. Students required to submit homework, assignments or other projects counting towards their final result must be given advance notice of how, where and to whom the work is to be submitted. Beyond these requirements, it is not the instructor's responsibility to follow up on missing (i.e. non-submitted) coursework.
- Tests/assignments/project reports should be handed back to students as quickly as the marking process will allow, and only in very exceptional circumstances should the gap between submission and return of work ever exceed three weeks.
- The examination paper must be a fair and reasonable reflection of the course content. Guidelines concerning the broad format of the paper must be provided to students, as early as possible and certainly not later than the end of the second week of the semester.
- Examiners or competent deputies must be present at examinations during the first fifteen minutes of an examination so that difficulties arising from examination papers may be resolved. If examiners are unable to be present at the examination, they must be readily contactable by telephone.
- Where more than one internal examiner is involved in a paper, the mark recorded must be agreed by all examiners concerned. In the case of a paper is graded by an external examiner (exceptional circumstances), the judgement of the latter shall be communicated to the relevant examiner(s) and is normally accepted as final.
- Instructors must provide numerical results to the external examiner (before review of question paper) and also to the relevant Department for the meeting of the Court of Examiners. Marks agreed with the external examiner must be submitted not later than the morning prior to the relevant Court of Examiners' meeting.
- Borderline marks may be reviewed by the external examiner to have the mark adjusted by the Court of Examiners in the light of the candidate's performance in all papers, in particular the CGPA achieved.
- Instructors or adequately briefed deputies must attend examiners' meetings.

### **6.10 What efforts are made by the University to promote autonomy in the affiliated/constituent colleges?**

NA
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### **6.11 Activities and support from the Alumni Association**

Scholarships and Placements/Training
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### **6.12 Activities and support from the Parent – Teacher Association**

NA
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### **6.13 Development programmes for support staff**

Computer proficiency up-gradation programmes for the ministerial staff to achieve the desired standards and all the ministerial staff has been trained to handle computers for the routine jobs. The non teaching staff has been motivated and the self development achieved can be gauged from the higher qualifications attained by its staff during the last five years.

### **6.14 Initiatives taken by the institution to make the campus eco-friendly**

The University is taking the possible initiatives for energy conversation and the new buildings of the University are being designed accordingly to save the energy. The employees and students are advised to use the natural light, turn off the switches of lights, fans etc. whenever not in use, use of LCD monitors for computers, use of tube lights instead of bulbs etc. There are sufficient cross ventilation in laboratories and class rooms to avoid the unnecessary use of electricity. The University has also installed the Power Factor Correction System to save the electricity.

The University has taken several initiatives to make eco-friendly. The University has hired an outside consulting firm for energy auditing and its recommendations are being implemented throughout the University. The use of solar energy specially for heating water in student hostels has been attempted in one of the largest hostel on campus and has been a successful experience. The street lighting in some sections has been made functional with solar energy. There has been wide plantation throughout the campus and Thapar Institute of Engineering and Technology University is one of the greenest campuses in the region. The university has dedicated plantation areas and one such park “Nirvana” has come up beautifully during the last three years.

The University has made provisions of rain water harvesting system in all the new buildings.

The biological waste from various laboratories is collected by Semb-Ramky Environment Management Pvt. Ltd., Ludhiana on weekly basis as per MOU signed between university and them. All other solid waste of residences, hostels and campus is being collected and disposed off at Municipal Corporation dumping ground. Treatment of waste water is done by Sewage Treatment Plant (STP) and reuse of treated water for irrigation.

The University has followed the Government of India notification related to e-waste (Management & Handling) Rules 2011 that came into effect from May 1, 2012. These rules were circulated to all the Heads of Units and were advised to understand the definition of the e-waste mentioned at page no. 28,

sub clause (k), of clause 3 of the said rules. The University comes under the definition of Bulk Consumer which is also mentioned on the same page under sub clause (c) of clause 3 of the said rules and the responsibilities of the “Bulk Consumer” mentioned at page 31 under clause 6 of the said rules and the same has been understood by all concerned. All the Heads of the Departments / Schools / Centres / Units are required to maintain the stock of the e-waste generated in their respective Departments / Schools / Centres / Units in the Form-2 of the said rules. They are supposed to complete entries from Sr. No. 1 to 5 of the Form-2. The e-waste generated can be sent to Central Stores once in six months with a copy to Chairperson, e-waste Management Committee. Central Stores has identified a specific area to store the e-waste sent by different units for final disposal to the authorized vendor M/s Singbros Mobility Solutions, D-85, Focal Point, Patiala.

Following steps have been taken for carbon neutrality:

- The students are not allowed to use the powered vehicles in the campus. They use only bicycles to move in the campus.
- Only LPG cylinders are used in hostels and other places for cooking.
- Installation of Solar Water Heating system at Derabassi Campus and University is also planning to install the same at Patiala campus also.

## **Criterion – VII**

### **7. Innovations and Best Practices**

7.1 Innovations introduced during this academic year which have created a positive impact on the functioning of the institution. Give details.

IQAC (Internal Quality Assurance Cell) has been actively involved in improving the academic systems and processes. The IQAC prepared the Annual Quality Assurance reports and organized the academic review of the departments. Based on the report of the academic review an action plan to implement the findings of the academic review has been developed. The academic review during the first phase was undertaken for engineering departments which admit 80% of our total enrolment. The process covered review of curriculum, research, staffing, infrastructure, governance, academic and administrative decision making, strategic and implementation planning encompassing much of the entire academic culture of the University. The findings report sets out a path, by means of a set of recommendations, to achieve a closing of the performance gap. There are also some observations and recommendations which are core to the contemporisation process. In order to kick start this process of developing an overall plan, an operational document has been developed as a first step listing a broad implementation plan for effecting the necessary changes. The operational document has 91 action points and we have put in a sustained effort to achieve to the goals of the University.

**The complete action plan is appended at Annexure 1 of this report.**

The academic review of all the other schools is in progress.

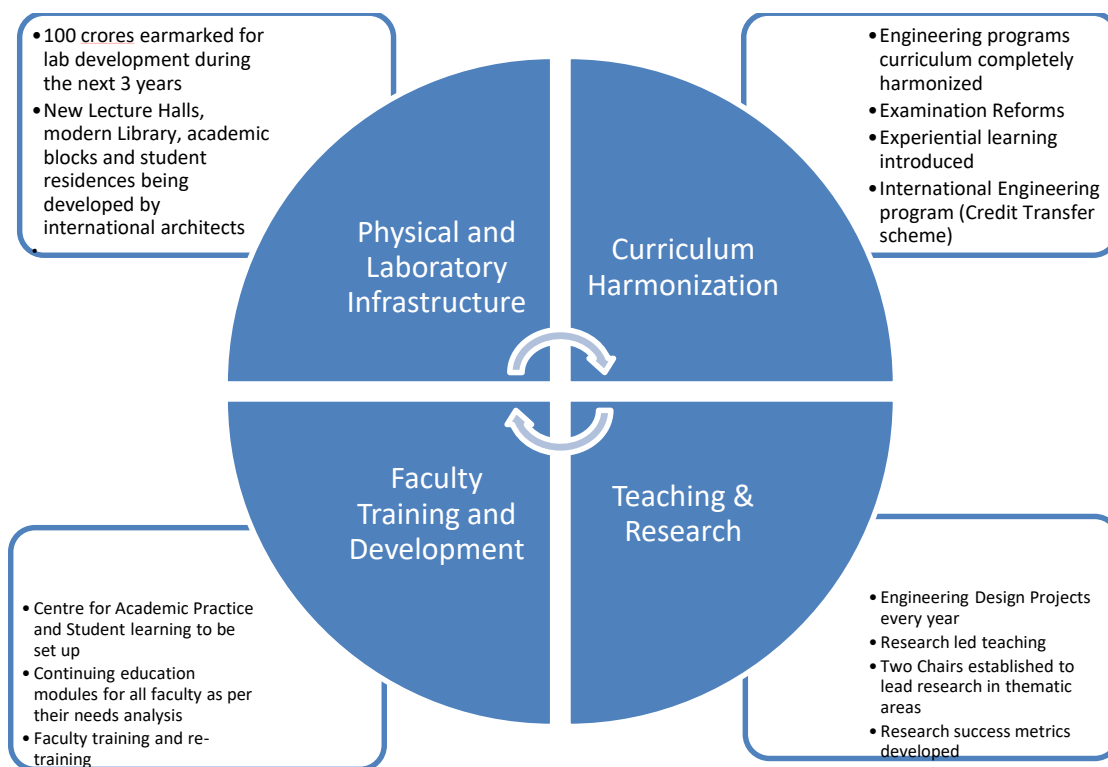
Some other initiatives of IQAC are listed below:

- The IQAC conducted the SWOT analysis of the University and a University Risk Management strategy which is also described in one of the sections of this report as a major initiative.
- Academic Audits are conducted periodically also as part of ISO-9001: 2008 implementation.
- The peer Team in its visit to the University in 2009 had recommended provision of hostels for more students. The University has constructed Hostel –J and is constructing three new state of the art student residences keeping in mind the increased intake.
- The University has created a central facility called SAI Lab where state of the art scientific equipments needed for latest research in modern areas of sciences has been installed..
- The University has also received a grant of Rs. 12 crore under TEQIP (Technical Education Quality Improvement Programme) of Ministry of HRD, Government of India for infrastructure development.
- The IQAC has also developed a workload model for the academic staff. The model encompasses all major activities of the staff – teaching, research and scholarly activities/administration. The model is in the process of being implemented.

### **Major Initiative 1**

#### **Contemporization Program:**

In line with its mission to provide world class educational experience by incorporating global best practices in its format, Thapar Institute of Engineering and Technology University has embarked on a Contemporization Program under academic mentorship of Trinity College Dublin, the University of Dublin, Ireland. The Contemporization Program has been designed to deliver a research inspired, outcome based educational experience to the students in partnership with Trinity, an international university of repute. The unique collaboration has been contemplated to give students a flavour of international educational experience, prepare them for professional careers, and expose them to state of the art facilities and cutting edge research in the fields of engineering and science. The broad scope of this collaboration covers all the major academic and research activities of Thapar Institute of Engineering and Technology University including developing a outcome based teaching pedagogy, research orientation including supporting lab infrastructure, academic curriculum harmonization, physical Infrastructure, faculty training and development, and develop new joint programs. The broad scope of the agreement is depicted in the figure below.



As a first step towards embarking on this journey to contemporize the academic systems and processes at Thapar Institute of Engineering and Technology University, an Academic Review of the engineering departments at Thapar Institute of Engineering and Technology University was completed by a team of experts from Trinity College Dublin in November 2014 on our request. Trinity submitted a detailed written report about the findings. The objective of the review was to identify the gaps between the current performance levels of Thapar and the targeted levels which would take Thapar education systems to a significantly higher paradigm. The review process covered review of curriculum, research, staffing, infrastructure, governance, academic and administrative decision making, strategic and implementation planning encompassing much of the entire academic culture of the University. The findings report set out a path, by means of a set of recommendations, to achieve a closing of the performance gap. There were also some observations and recommendations which are core to the contemporisation process. An overall plan for change was then prepared. For implementing the findings of the academic review, as a first step the harmonization of curriculum was taken up to bring it up to date with global standards.

### **Curriculum Harmonization**

The curriculum of the undergraduate engineering programs has been harmonized in line with Trinity with an objective is to create a global outcome based, project led education programs where all students are exposed to a harmonized curriculum. The Trinity curriculum places greater emphasis on research inspired and project led teaching which has been incorporated at Thapar. For this purpose, Thapar deputed teams of its senior faculty to Trinity to understand and implement a modern engineering curriculum. Some of the significant changes made in the curriculum is introduction of three large engineering design projects during the first two years followed by a capstone and an individual research project during the later years. Thapar has adopted the learning outcomes approach for teaching with

greater reliance on self-directed learning, mini-projects within the courses, research-led teaching, use of project work and assignments. Most of the first two years of curriculum across of undergraduate programs will remain the same and the specialized courses will be taken up during the later years.

### **Pedagogy**

The teaching pedagogy employed for the engineering programmes offered at Thapar Institute of Engineering and Technology University reflect the long held ethos that engineering education should be broad-based to enable graduates to develop throughout their professional careers, finding solutions for as yet unseen challenges. The partnership with Trinity focuses on strategies to deliver a research inspired, outcome based educational experience to the students at all levels. This is a major shift in focus from the current content-oriented imparting of engineering education to a project-based and outcome-oriented educational experience. The new teaching pedagogy lays emphasis on applying engineering skills through relevant engineering design projects, improving team-working skills and awareness of issues relating to ethics and professionalism. Also, all academic staff is encouraged to bring in cutting-edge research ideas from their own research into their teaching

Thapar Institute of Engineering and Technology University has sponsored two high impact Chair Professors (research) positions at Trinity in thematic research areas of interest to both partners. The Professors would spend time both at Thapar and Trinity and would lead a major research effort which will culminate into setting up of a State of the Art research centre at Thapar in the next five years. The thematic areas will be inter-disciplinary and would involve several other academic staff. The teams would focus on attracting large research funding and publications in high impact journals.

Thapar has set up a Research Committee to establish a structured PhD program, form inter-disciplinary research groups, encourage/ support the academics to publish, take research students, raise research funding and feed this knowledge into advanced undergraduate and postgraduate courses and oversee the setting up of a major Research Centres. The committee will review the metrics for measurement of research output (Publication quantity and quality, PhD student(s) produced, research funding raised, measures of innovation and impact).

The committee has identified research thematic areas which will be pursued during the next 5 years. The committee is headed by Dean Research and Sponsored Projects and includes several key research active staff.

### **Faculty Training and Development**

As part of the Contemporisation Programme, Thapar Institute of Engineering and Technology University is also setting up a Centre for Academic Practice and Student Learning (CAPSL) which is similar to the 'Trinity's CAPSL unit. Through this centre, TU will expose the 'entire faculty to in-house learning modules including e-learning during the next 3-5 years. An academic needs' analysis is currently underway based on the questionnaire which has been administered to all academic staff. The Senior Academic Developers appointed for the purpose will act in a consultancy role to help Thapar establish the CAPSL centre that will have the skills, knowledge and ability to assist Thapar to achieve its institutional mission and strategic goals. As the centre gets established the CAPSL unit will draw from academic staff across different disciplines with specific interest in and knowledge of different

aspects of higher education pedagogy. CAPSL will have one senior academic developer from Trinity and two e-Learning technologists: continuous professional development (CPD) modules and certified programmes will be delivered by CAPSL staff, which will be continuously supported by Trinity academics and other staff. A number of specific needs have been identified (i) Training of all Thapar academic staff, (ii) Awareness training of senior staff (iii) Training of trainers to enable self-sufficiency. The training programmes will be developed based on core needs identified. Trinity staff and associates will deliver this programme at Thapar during the academic year. Each module will comprise 2 two-hour workshops and assessment exercises: participants will be provided with all necessary materials. The existing curriculum will be adapted to reflect the specific academic needs of Thapar faculty. A mentoring programme can also be provided. Participants will be required to submit a teaching portfolio for assessment, which will be developed over the course of the year and will relate to their teaching and learning. Successful candidates will be awarded a Special Purpose Certificate Academic Practice. Trinity in consultation with Thapar will agree the core modules that will form part of the special purpose certificate.

The training of all academic staff and on-going professional development will be instrumental in establishing the culture necessary for the CAPSL Centre to grow and contribute meaningfully to the contemporisation programme.

### **Laboratory and Physical Infrastructure**

Thapar Institute of Engineering and Technology University has developed a business plan, wherein the University will spend over Rs 500 crores in improving the laboratory and physical infrastructure at Thapar Institute of Engineering and Technology University. In order to modernize the Institution, Thapar team has developed a modernization plan for the important teaching and research laboratories in consultation with Trinity. Thapar Institute of Engineering and Technology University has also hired world class foreign architects to develop key academic infrastructure that would include lecture hall complex, library, CAPSL centre, student residences and other academic blocks. Face lifting and modernization of older buildings has also been planned in a major way. Thapar Institute of Engineering and Technology University is also engaging services of a consultant to implement an international ERP system to manage and govern the academic and administrative functions.

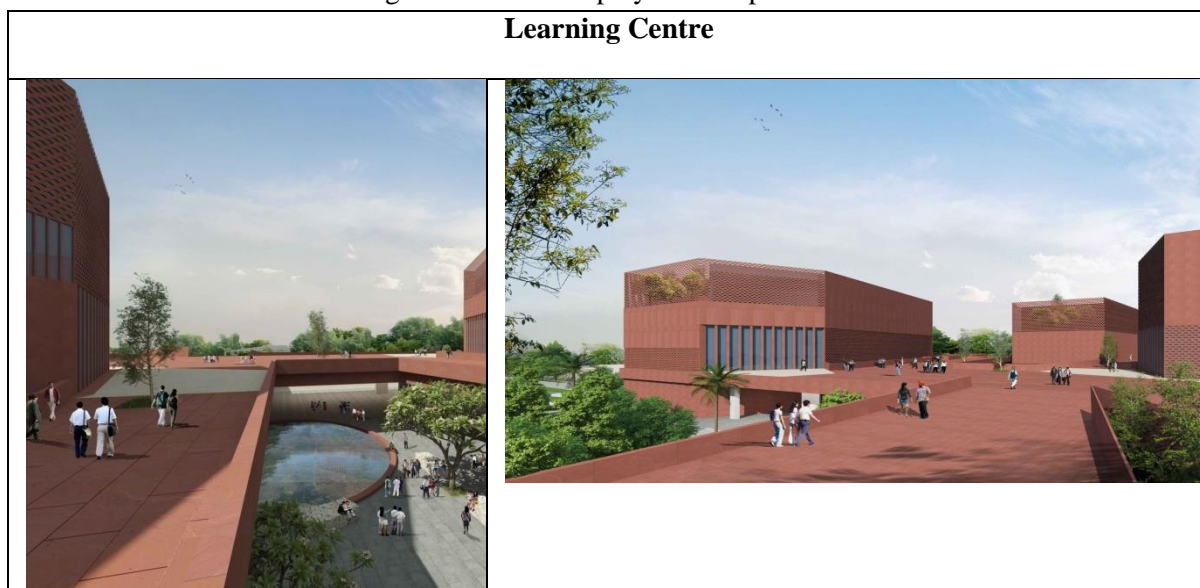
**New boys and Girls hostel;**







The rendered view of the building that will come up by 2017 is provided below:



An Innovation Centre/Venture Lab would be set up at TU to run accelerator program open to teams of Thapar students (undergrad and postgrad) with an early-stage business idea. This unique incubator will provide coaching, expert advice, seed funding and access to space and facilities needed to test out and launch new ventures. The program will support students in developing investor-ready ventures and will be supported by a network of Thapar alumni and friends.

### **Examination Reforms**

Thapar Institute of Engineering and Technology University has initiated reforms in the way, examinations are conducted. In the contemporary set up, the concerned instructor prepares the question paper along with model solutions to each question and seeks feedback from a faculty colleague from the cognate area. The same is then be sent for vetting to an outside expert (Trinity in this case). After the conduct of the examination, the marks are uploaded on an academic software which generates an excel sheet listing the marks obtained by each student in all the subjects. An examination board is then convened consisting of internal and at least one external member who reviews sample answer scripts, projects and the marks obtained by the students.

7.2 Provide the Action Taken Report (ATR) based on the plan of action decided upon at the beginning of the year:

### **Please See Annexure 1**

7.3 Give two Best Practices of the institution (*please see the format in the NAAC Self-study Manuals*)

### **Best Practice 1**

**Title of the Practice: Measuring attainment of Student outcomes and course learning outcomes**

**Objectives of the Practice** (in about 100 words): To assess each outcome, we use performance criteria and course learning outcome for each course. We have defined measurable course learning outcomes for each course and their attainment is measured for every course in every semester. The example below describes the complete procedure of measuring the attainment of student and course outcomes

**The Context (in about 150 words):** The assessment process uses both direct and indirect measures to measure the attainment of each outcome. The examples of such measures are given below:

**Direct Measures**

- Student Assignments
- Projects
- Examinations

**In-direct measures**

- Surveys and questionnaires
- Exit interviews

To assess each outcome, we use performance criteria for that outcome. For example in outcome A, we defined four performance criteria (A1 to A4) that need to be met to successfully achieve that outcome at a minimum target performance level for a program. In the section below, the assessment of Outcome A using performance criteria A3 is explained as an example. The academic staff identified that performance criterion ‘A1’ would be achieved if the corresponding activities in three courses, i.e., Computer Aided Design (UME401), Advance Machine Design (UME701) and Mechatronics (UME802) are successful. For example, at the program level, A3 reads

- *A3: Applying scientific and/or engineering principles towards solving engineering problems.*

In order to assess the achievement of outcome ‘A’ through performance criterion ‘A3’, the courses are already identified in Table 4.2. For each of these three courses, at the course level, identify the course outcome that would measure the achievement of outcome ‘A’ through performance criterion ‘A3’.

- **Course level**As the performance criteria at the program level flow to the course level, then specific interpretation in each course constitute the course outcomes in each course. For example: specific interpretations listed above are the actual course outcomes in these courses that contribute to the program level A3 performance criteria. In each course, we assess the level of achievement of each course outcome. The data are then combined to analyze and evaluate the program level achievement of each program outcome. If any student outcomes are not met, action is taken for improvement.

**Step by Step Process, Constraints / limitations, if any (in about 400 words)**

**Step-by-step process for assessing Student Outcomes**

<b>Step 1</b>	The Program Coordinator analyses each student outcome by breaking down each outcome into several performance criteria (PC), assigns weightage, well-designed surveys have been used to assess each outcome.
<b>Step 2</b>	For each outcome, define performance indicators (Assessment criteria) and their targets.
<b>Step 3</b>	Identify/select courses that address the outcome (each course contributes to at least one of the outcomes). Hence, each outcome is assessed in several courses to ensure that students acquire an appropriate level in terms of knowledge/skills of an outcome.
<b>Step 4</b>	The course coordinators collect the qualitative and quantitative data and is used for outcome assessment in a continual process.
<b>Step 5</b>	The Program Assessment Committee (PAC) analyzes the collected data. If the assessed data meets the targeted performance value as specified in step 2, then the outcome is attained.

<b>Step 6</b>	The Department Academic Affairs Committee (DAAC) recommends content delivery methods/course outcomes/ curriculum improvements as needed. In case the targeted performance for some outcome is not met, a corrective action plan is put in place which serves as a feedback to the process for continuous improvement.
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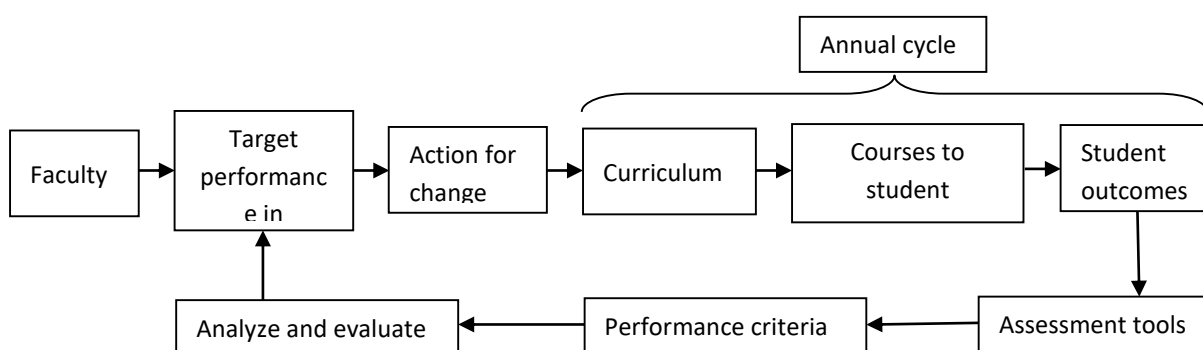
### Evidence of Success (200 words).

The data analysis is carried out once per year. The expected level of attainment has been marked *Excellent, Very Good, Good, Satisfactory* and *Unsatisfactory* on a scale of 1 to 5 as given below:

- i. **Excellent:** Overall weighted score for the outcome is  $\geq 4.5$ .
- ii. **Very Good:** Overall weighted score for the outcome is between 4 and 4.5.
- iii. **Good:** Overall weighted score for the outcome is between 3.5 and 4.
- iv. **Satisfactory:** Overall weighted score for outcome is between 3.0 and 3.5.
- v. **Unsatisfactory:** Overall weighted score for the outcome is  $\leq 3.0$ .

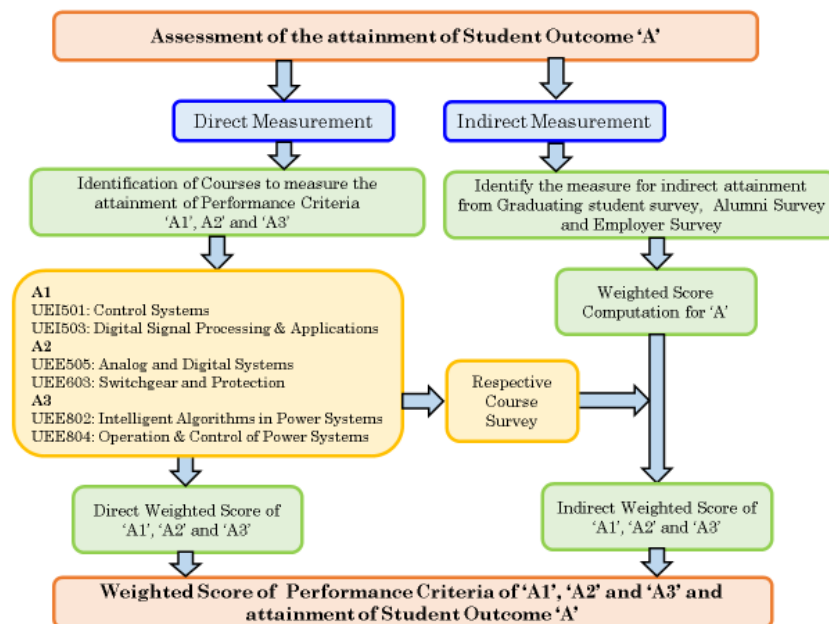
### Assessment of Attainment of Student Outcomes

On the basis of results of assessment tools, the level of attainment of each outcome is carried out. The assessment loop for each student outcomes is shown in Figure.



### Student outcomes assessment loop

To attain each outcome, the different performance criteria defined for that outcome are assessed. For example, in outcome 'A', we defined three performance criteria (A1 to A3) that need to be met to successfully achieve that outcome at a minimum target performance level for a program. The computation of attainment for each A-K for the respective years is placed into the student outcome notebooks separately. To clarify further the assessment of the attainment of outcome 'A' is explained.



### Process for measurement of attainment of outcome 'A' for the year 2016-17

**Problems Encountered and Resources Required (in about 150 words):** This activity requires faculty members to compile scores for CLOs every semester and the data then needs to be tabulated to measure attainment of outcomes. *(This activity is undertaken by the IQAC every semester)*

### Best Practice II

#### **Title of the Practice:** Experiential Education

**Objectives of the Practice (in about 100 words):** It is proposed to develop an experiential education center where the faculty will be engaged to work on real-world problem using undergraduate students from a variety of programs. Furthermore, the center will engage industry to bring their problems to the center for students to solve or to be involved in a problem being pursued by the center.

Experiential education can be introduced only after gaining the confidence and faith of students and faculty. Faculty must see an opportunity in innovation and in trying new paths that take you directly to the destination. Students must believe that their professor can teach them problem-solving skills required in the real world.

**The Context (in about 150 words):** The current paradigm for teaching and learning can best be described as “Sage of the Stage” method of teaching. The teacher stands in-front of the class and delivers a lecture. Years of this instill a lot of theoretical knowledge in our graduates. The students are expected to absorb the content and when an engineering opportunity comes (sometimes years later) are expected to be able to apply the concept. Most graduates do not know how to apply this learning in industry, however, many learn to apply the concepts but after months and sometimes after years of self-learning in industry.

With time engineering systems have become complex and varied. No one engineer can be expected to know about the entire system. Also, professional teachers with strong basics but little practical experience have replaced practitioners in the classroom.

This has brought us to the current state where students have book knowledge but lack practical skills. On top of this, the students of today are different from those of yesteryears. Today’s students were born with iPhones, laptops, microwaves, intelligent cars, Internet,

Internet of things etc. For them access to information is far easier than ever before. Although our students have changed, the teaching and learning methods have not.

**Constraints / limitations, if any (in about 400 words)** Today's engineers must be versatile enough to deal with problems of industry. As industries vary so do their problems and requirements. Engineers of tomorrow must be able to meet all the requirements posed to them. It would be ideal if the graduates of today were skilled in self-learning, problem solving and have the ability to apply theoretical concepts to industrial applications.

There exists a need to modify engineering education to train engineers to deal with complex problems; to take advantage of ready access to information and to capitalize on the special talents of our students.

**Evidence of Success (200 words).**

A multi-pronged approach is proposed for implementing experiential education.

Students in First year engineering have a desire to design and build like an engineer.

However, in our programs we focus on just teaching them basics. It is no surprise that the students soon lose interest in becoming engineers and focus on graduating with the least amount of effort. This moves the students far away from innovation and entrepreneurship and puts them in the mode of ticking milestone boxes enroute to graduation.

- *Students can be given a dose of engineering without compromising engineering basics.*
- *Design and build week provides benefits in learning, context, soft skills, self-learning etc. that are only limited by imagination.*
- *The quality and content of the Capstone Project can be improved, by introducing decision-making and project work in earlier courses.*

**Problems Encountered and Resources Required (in about 150 words)**

Thapar is establishing a fund of Rs 3 crores per year for these initiatives. The fund should be cumulative with potential for spending unspent money in the following years until the sixth year when a review conducted by Thapar after the fifth year will determine the future of the initiative.

People: The initiative will require staff, students and faculty. Faculty with knowledge of the curriculum will provide the backbone of the initiative. They will help develop the real-world initiatives for the undergraduate thread. The development of the activities will be done by graduate students or by senior undergraduate students. These students will be hired as research assistants.

The equipment required for the real world activities will be designed by the faculty and research assistants and will be built and maintained by staff. For the undergraduate thread two faculty members from each program. The faculty will devote equivalent of one teaching task towards the project. Two teaching assistants (grad or undergrad) will provide assistance to faculty members in developing activities around the real-world problem. In addition we will require three staff with mechanical background, two staff with electrical background and two staff with computer/software background to put the activities in motion for the undergraduate program. As of now I have some real-world activities in mind. Some of them can be attempted in the first year but most will be implemented in year two with the first year spent in designing, building and acquiring equipment. The planned activities include: Hand writing recognition with neural networks; Aerial Logo activity; two axis robot; two axis machine; pitching machine etc.

**7.4 Contribution to environmental awareness / protection**

The University has very lush green campus. The Horticulture Section of the University is responsible to maintain the lawns, fruit orchard, Nirvana Park (A 6 Acre Park containing 3000+ plants of difference species) and other areas. The University has also won many prizes in state level flower competitions.

**PARYAVARAN WELFARE SOCIETY (PWS)**

Like all previous years many events were organized by the society. Some of the major events were Solid Waste Management Exhibition (under Swachh Bharat Abhiyaan), Graffiti wall painting under Swachh Bharat Abhiyaan, Tree Plantation drives, Earth Day Celebrations with invitation to different schools, Tree Naming Programme, Save animal campaign (Through painting on trees), Vehicular Pollution check campaign, Nature Conservation Day Celebrations. Society received many accolades for its work, which includes Award of honour under Green Punjab Mission, Award of Honour by Municipal Corporation, Patiala.

So if you want to save our mother earth from further destruction please do contribute because your little contribution is the only thing that is needed for the big cause of conservation.

7.5 Whether environmental audit was conducted?      Yes ☐      No ☒

7.6 Any other relevant information the institution wishes to add. (for example SWOT Analysis):

**Please see Annexure IV**

## **8. Plans of institution for next year.**

### **Plans for next 5 years**

#### **Curriculum Harmonization with International Partners**

TIET aims to develop teaching and learning methodologies that can be benchmarked with highest level of international standards and to address changing rapidly changing industry scenarios. The partnership with Trinity focuses on strategies to deliver a research inspired, outcome based educational experience to the students at all levels. This is a major shift in focus from the current content-oriented imparting of engineering education to a project-based and outcome-oriented educational experience. The new teaching pedagogy lays emphasis on applying engineering skills through relevant engineering design projects, improving team working skills and awareness of issues relating to ethics and professionalism. As a start to this endeavour, Trinity College of Dublin conducted an academic review of its departments and schools in 2016.

For implementing the findings of the academic review, as a first step the harmonization of curriculum was taken up to bring it up to date with global standards. While the curriculum for the undergraduate program has been harmonized, TIET is already enroute to do the following in next 2 to 3 years:

Harmonization of all schools – Aligning curriculum for Masters in Science programs offered by schools which are largely content driven at present. In order to modernize and enrich these programs, an academic review has been scheduled by Trinity staff.

- Harmonization of Post Graduate Programs – Aligning curriculum for Masters in engineering programs offered by schools which are largely content driven at present to outcome based learning models.
- TIET would also identify international partners for the new programs to ensure that the curriculum, teaching and faculty development processes are relevant to the global audiences



- Students emerging from rote learning system have great foundation and depth in the subjects of their study but lack real world application knowledge or the creative skills that are sought by employers in rapidly changing industries today. TIET aims to augment their curriculum to address life skills such as strong problem solving, creativity and critical thinking abilities. TIET aims to add courses on writing skills, emotional intelligence, analytical skills, communication skills, industry overviews, general commercial knowledge etc. in each of the programs.
- Focus towards Student Centric Learning. Today, there is tectonic shift in the paradigm of education is to make the Individual learner, centre of the education ecosystem – rather being a taker of the present education ecosystem. The higher education ecosystem is transforming globally to cater to the personal interests and varying demands of the learner. Unlike the traditional format where the university was the prime entity responsible for knowledge transfer and delivery, today and in near future - industry and society will contribute immensely to the students' development by offering different learning techniques and platforms. These enable the learner to remain relevant in the ever changing environment by equipping him/her with the most critical skills
- TIET has setup a Centre for Academic Practices and e-learning (CAPSL) with an overarching aim to enable the shift to a new paradigm of teaching and learning. The new paradigm requires TIET faculty to move from Teacher Centred Learning to Student Centred Learning, including alignment of understanding of the shift of both staff and students. CAPSL will work on the presentation and lecturing skills and bring in creativity and imagination in teaching. This centre will be manned by senior TIET and TCD academic during the initial period and more senior faculty from TIET will be associated who will eventually take over the activities of the centre. All academic staff will take up 3 to 5 certification modules at CAPSL Centre. The certification course is based on the premise that everybody educating our Students at TIET should be committed to and supported in achieving an excellent student learning experience. TIET will expose the entire faculty to in-house modules during the next 3 to 5 years.
- Facilitating Self-Paced and Peer to Peer Learning. TIET aims to develop curriculum and programs that focus on all 4 types of learning – TeacherLed, Self-Paced, Peer to Peer and Social Learning. This would entail a bold move towardsteachers supporting active, deep and independent learning through group works,assignments, internships etc. It would also mean that students would have increasedresponsibility and accountability for their learning.To enrich peer to peer learning and create diversity in cohort – TIET would have programswith mixed audiences. For example, all undergraduate, postgraduate, doctorate andexecutives who have taken same electives would be brought in the same room wheredifferent perspectives could be shared and appreciated.
- Catering to needs of modern day digital learner. As part of its contemporization program, TIET also plans to put all elements of learning ranging from course structure, content, instruction etc. over digital media. Digital technology will enable faculty at TIET to create more interactive, engaging, flexible learning materials in a range of digital and multimedia formats and make them available to students online. These changes will enable them to have a more diverse set of pedagogical approaches to support students, which means that they can be more inclusive in their teaching methods. For all its programs, TIET aims to develop high quality online learning content with up to 20% online material through co-opting publicly available content from open sources and allow credit equivalence. TIET would identify partners for content and screen courses from SWAYAM to use in our courses.

• **Increasing touch points for Student interaction with Industry:**

- Organise site visits: Increase awareness through site visits, to a production line, operational facility or construction site which will offer students the opportunity to see engineering in action.
  - Conduct guest lecturers: Invite industry and subject matter experts to encourage practical learning and promote learning beyond the classroom
  - Deep immersion role plays: Introduce the concept of deep immersion role plays in which students are expected to take on a particular role for an extended period of time (usually the role of a practicing engineer), where they are set a realistic brief that they must carry out using realistic processes in a working environment.
- **Launch of new programs and courses**
- TIET aims to set up Department Advisory Board that will be supported with Academic Council to promote better governance in Teaching and Research. TIET will also set up an Industry Advisory Board that will help reduce the gap between Industry and Academia.
  - TIET aims to setup a process to get and analyse inputs from the industry advisory board for new courses, programs and schools
  - Departments can develop pitch for new programs that they want to introduce under them. Academic Council will develop policy to evaluate all such proposals. All proposal should be accompanied by industry inputs from advisory board, market research on supply and demand, information on potential partners who can help TIET with global content and foreign faculty, potential for attracting foreign students

Name Prof Ajay Batish

Name Prof Prakash Gopalan

\_\_\_\_\_  
Signature of the Coordinator, IQAC  
Director

\_\_\_\_\_  
Signature of the Chairperson, IQAC/

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## **Significant Activities and contribution of IQAC**

**An academic review was undertaken by a Trinity Review Team during January 2017 for the purposes of:**

- Reviewing progress on the contemporisation project being carried out at Thapar Institute of Engineering and Technology (TIET) and providing feedback on this progress;
- Commenting on the discussions of the Thapar-Trinity Steering Committee and on other issues within the partnership;
- Continuing the departmental review process of Computer Science, Electronic & Communication Engineering, Civil Engineering, and Mechanical Engineering.

A 14-member Trinity team visited Thapar Institute of Engineering and Technology (TIET) on 9-12 January, 2017 to review and assess progress on Thapar's contemporisation goals against stated objectives. Such reviews are undertaken on a bi-annual basis as part of the overall evaluation process. Thapar Institute of Engineering and Technology (TIET) and Trinity have formed a steering and review committee to agree and make recommendations, as necessary, for improvements and/or amendments that will help Thapar Institute of Engineering and Technology (TIET) achieve its stated objectives by 2020. This visit followed an earlier visit by Thapar Institute of Engineering and Technology (TIET) team to Trinity in September 2016. The visit comprised a number of formal and informal high-level discussions on the overall state of the Contemporisation project and its development. The committee also reviewed a number of reports and subsequent discussions focused on department-level activities in response to the Report delivered by Trinity in February 2016. Besides this discussions focused on aspects of the partnership such as CAPSL, the experience of the two groups of Thapar students in Trinity, student recruitment and the moderation of Thapar Institute of Engineering and Technology (TIET) examinations and examination board meetings. Both Thapar Institute of Engineering and Technology (TIET) and Trinity re-iterated their commitment to the partnership, to deliver on all elements of the formal agreement to the satisfaction of both parties, and to seek how best to drive the project forward. Both institutions expressed happiness on the reported progress by Thapar Institute of Engineering and Technology (TIET) during the last 2 years. Some of the key activities undertaken by Thapar Institute of Engineering and Technology (TIET) in 2016-17 as part of its contemporization are:

- Major progress underway on adding to the physical infrastructure of the Thapar campus.
- ABET (US accreditation) of key undergraduate programs
- Measuring course learning outcomes for each course and using this data for continuous improvement
- Curriculum harmonization of undergraduate programs marking a paradigm shift in pedagogy; Introduction of major projects in curriculum to support experiential learning.
- Improvement in staffing levels in the key domain of technical support and in the academic domains of computer engineering and electronic engineering;
- Purchase of new cutting edge items of experimental equipment which will not only support enhanced teaching of contemporary subject matter but which demonstrates a commitment to building a research resource infrastructure.
- Increase in student intake which marks the start of this particular growth phase of the University.
- Process of establishing two Thapar chairs in School of Engineering and School of Computer Science at Trinity has well and truly begun. The proposed set of eight possible chair specialisms was critically assessed against a background of existing and strategic areas of research in both institutions while also taking into account national priorities. It was agreed to distil the proposed eight topics down to one overarching but broad heading – Smart and Sustainable Places

(understood to include energy and other cognate disciplines). The active identification of possible target candidates for the chairs has started.

- Hiring of two Thapar Chairs will open up the research collaboration element of the partnership which is seen by both parties as a major factor in realizing the goals of contemporisation.
- Excellent academic performance of the advance cohort of eight Thapar students at the Trinity year 3 examinations.
- Involvement of a number of Trinity staff in moderating the Thapar examination papers, participating in a newly constituted Thapar Examination Board, participating remotely in interviewing Thapar staff seeking promotion, and in examining Thapar PhD theses. There has also been consultation with regard to equipment purchase.
- Commitment to the 'New Directions' programme and culture-change delivered in conjunction with Trinity-CAPSL, and the stated intention to escalate provision and to provide Thapar academic staff the opportunity to obtain professional accreditation in academic practice.
- Positive engagement of 100 academic staff in the 'New Directions' programme and the tangible benefits evidence in the outputs of the communities of practice. A second cohort of another 100 faculty members have been enrolled for 2017 while the first moves to the next level special certification program.
- Establishment of Venture and Design Lab and major curriculum interventions related to Innovation and Entrepreneurship in partnership with University of Groningen.

Cumulatively, these elements mark a significant step forward in the positive direction for the implementation of contemporisation Program.

The IQAC cell also measured the course learning outcomes of all courses during the year 2017. The attached .ppt file provides a summary of the results. (file name Annexure 1 Jan May CLOs)

## **Annexure II**

For details on action taken, please see the attached .ppt file. (Annexure II Action Taken)

## ACADEMIC CALENDAR

<b>ACADEMIC CALENDAR 2017-18</b>		
<b>FIRST SEMESTER</b>		
• Registration* (OTHER THAN FIRST YEAR STUDENTS)		01.08.2017 – 04.08.2017
• Commencement of Classes (OTHER THAN FIRST YEAR STUDENTS)		01.08.2017 at 13:00 Hours
• Late Registration (With late registration fee) (OTHER THAN FIRST YEAR STUDENTS)		07.08.2017 to 21.08.2017 (with late registration fee of Rs. 1000/-) 22.08.2017 to 31.08.2017 (with late registration fee of Rs. 5,000/-)
• Orientation Program (1 <sup>st</sup> Year UG) Orientation Program (1 <sup>st</sup> Year PG) Commencement of Classes (1 <sup>st</sup> Year UG) Commencement of Classes (1 <sup>st</sup> Year PG)		24.07.2017 – 28.07.2017 01.08.2017 – 02.08.2017 31.07.2017 03.08.2017
• Teaching (1 <sup>st</sup> year) (6 weeks) Teaching (2 <sup>nd</sup> & 3 <sup>rd</sup> year) (7 weeks) Teaching (4 <sup>th</sup> year) (7 weeks)		31.07.2017 to 08.09.2017 01.08.2017 to 15.09.2017 01.08.2017 to 15.09.2017
• Reading Week (for UG and PG students admitted in July 2017)		11.09.2017 to 15.09.2017
• Mid-Semester Test		18.09.2017 to 25.09.2017
• Teaching (3 weeks)		26.09.2017 to 13.10.2017
• Mid Semester Vacations* (05 days)		16.10.2017 to 20.10.2017
• Teaching (1 <sup>st</sup> , 2 <sup>nd</sup> & 3 <sup>rd</sup> year) (5 weeks) Teaching (4 <sup>th</sup> year) (6 weeks)		23.10.2017 to 24.11.2017 23.10.2017 to 01.12.2017
• Reading Week (for UG and PG students admitted w.e.f. July 2015)		27.11.2017 to 01.12.2017
• End Semester Examination		04.12.2017 to 18.12.2017
• Winter Vacations (18 days)		19.12.2017 to 05.01.2018
<b>SECOND SEMESTER</b>		
• Registration*		08.01.2018 – 12.01.2018
• Commencement of Classes		08.01.2018 at 13:00 Hours
• Late Registration (with late registration fee)		15.01.2018 to 26.01.2018 (with late registration fee of Rs. 1000/-) 29.01.2018 to 14.02.2018 (with late registration fee of Rs. 5000/-)
• Teaching (1 <sup>st</sup> , 2 <sup>nd</sup> & 3 <sup>rd</sup> year) (8 weeks) Teaching (4 <sup>th</sup> year) (9 weeks)		08.01.2018 to 02.03.2018 08.01.2018 to 09.03.2018
• Reading Week (for UG and PG students admitted w.e.f. July 2015)		05.03.2018 to 09.03.2018
• Mid-Semester Test		12.03.2018 to 19.03.2018
• Teaching (1 <sup>st</sup> , 2 <sup>nd</sup> & 3 <sup>rd</sup> year) (7 weeks) Teaching (4 <sup>th</sup> year) (8 weeks)		20.03.2018 to 04.05.2018 20.03.2018 to 11.05.2018
• Reading Week (for UG and PG students admitted w.e.f. July 2015)		07.05.2018 to 11.05.2018
• End Semester Examination		14.05.2018 to 28.05.2018
• Summer Vacations (53 days)		29.05.2018 to 20.07.2018
Summer Training for BE students after Second Year as per respective schemes.		

### SWOT analysis of the university

SWOT analysis of the institution/university focusing on its present status in the quality hierarchy and proposed measures to address the shortcomings.

#### TIET Strengths

The principal strength of TIET lies in the forward-looking vision, dedication, and outstanding quality of its leadership and faculty, and strong alumni network which is determined to cater to the everchanging needs of the youth nationally and globally.

#### **1. Recognition across the world:**

TIET is at present amongst the top few Indian private universities who are recognized among the academic world and global rankings. Apart from being 26th amongst top engineering colleges and universities in NIRF Ranking in 2017, TIET has broken into the renowned international rankings.

#### **2. Accreditations from National and International Agencies:**

TIET is at present ranked as an 'A' grade University by NAAC. TIET has displayed continuous improvements with respect to its NAAC ratings in last 15 years when it was rated as B+ in 2002. Most of the B.E. programs of the institute are accredited by the National Board of Accreditation (NBA) India. Apart from being accredited nationally, since TIET aims to benchmark itself with Global Universities, TIET is on the path to get all its programs ABET Accredited. The UG program in Mechanical Engineering, Civil Engineering and Electronics have been accredited by ABET, USA. A review of the Chemical and Electrical department was also carried out by ABET in 2017, and the result is awaited.

Responsive to increasing globalization, ABET works to ensure that the graduates of ABET accredited programs can employ their talents internationally. ABET accreditation verifies that educational experience of students meets the global standard for technical education. An ABET accreditation also signifies that TIET program is comparable in quality to all other international programs, promote "best practices" in education which are based on "learning outcomes," rather than "teaching inputs" and would directly involve faculty and staff in self assessment and continuous quality improvement processes.

#### **3. Research conducive environment:**

TIET has witnessed an increasing trend in the number of publications and citations over the past decade. It receives multiple sponsored research projects and a substantial quantum of funding for M.E. dissertation. The institute has taken specific steps to support and recruit quality PhD candidates; the constitution of the "Senate Research Committee" to discuss all matters pertaining to policies of PhD programs and other research parameters like consultancy, testing and IPR cell is one of the many initiatives. TIET started focusing on its research portfolio only in the last decade and since then the annual number of publications for TIET have grown to almost 10 times. TIET today publishes over 700+ publications annually. TIET has established strong partnerships with high ranking global universities like Tel Aviv University, Trinity College Dublin and University of Waterloo. At present, TIET has a citation per article of 6.85 and 6.2 in Web of Science and Scopus respectively – Which is best amongst leading private universities in India. TIET also plans to fund two senior academic positions in Trinity, one in the School of Computer Science and Statistics and one in the School of Engineering on agreed thematic research areas. The posts will contribute to the development of a research culture at TIET, which may support the establishment of a research centre at TIET in future.

#### **4. Faculty Development:**

TIET has established the Centre for Academic Practice and Student Learning in association with Trinity College, Dublin to expose the entire faculty to in house learning modules and professional development practices. CAPSL will work on the presentation and lecturing skills and bring in creativity and imagination in teaching. This centre will be manned by senior TIET and TCD academic during the initial period and more senior faculty from TIET will be associated who will eventually take over the activities of the centre. At present, CAPSL has had 2 annual batches of the above program and over 45% of present faculty has been covered across these batches.

#### **5. State of the art infrastructure:**

TIET is working towards building and upgrading its infrastructure to match the best in the world. A modernization plan for research laboratories in consultation with Trinity has been prepared and implementation is in progress. TIET plans to spend over 200 Crores across next 5 years as it plans to modernize its entire campus benchmarking itself with global universities like Trinity College of Dublin. It has engaged an Irish firm Mccullough-Mulvin Architects for developing the blue print of entire modern campus. TIET has also hired world class foreign architects to develop key academic infrastructure and this would include a new computer science block, library, lecture hall complex, student residences and other academic blocks.

#### **6. Active Collaborations with global universities:**

Over the years TIET has developed academic links with some 18 prestigious universities spanning more than 10 different countries in the world. These partnerships and collaborations are invaluable assets for TIET as a leading institute. Ongoing collaborations with top global universities such as University of New South Wales (# 45 in QS Ranking-2018), University of Waterloo (#152 in QS Ranking-2018), Virginia Tech (# 367 in QS Ranking-2018), Tel Aviv University (# 201-250 in THE Ranking-2018) and University of Groningen (# 83 in THE Ranking-2018) with a broad scope of engagements targeted at providing increased exposure to students and faculty.

#### **7. Reputation and prestige:**

Located in the city of Patiala, with a legacy of over six decades TIET is one of India's finest institutions and a steady source of highly skilled graduates to corporate India. Backed by one of India's most diversified conglomerates, the Avantha group, TIET has built a national brand for itself and continues to attract quality students and faculty to further enhance its reputation. The alumni of TIET are well placed for their quality and performance across the globe which is reflected in their excellent contribution to society in varied fields such as business and industry, administrative and regulatory services, research, education, social and human rights organizations.

#### **8. Program relevance for the industry:**

Recognized by industry for the curriculum, pedagogy and relevance of programs. This is very much evident in the placement figures (both placement % and average salary). In the previous academic year approximately 250 companies visited the campus and over all placement % was approximately 87% - the best in the region with an average CTC of 5.85 lakhs.

#### **9. Academic Excellence:**

TIET has a transparent and robust admission and evaluation process. Admissions in to Bachelor of Engineering Programs are through Joint Entrance Exam for Engineering. The curriculum goes through periodic updations to factor in changing industry demands and new teaching and learning pedagogies. Recently, TIET has undertaken a curriculum harmonization activity in association with Trinity. The attainment of course learning outcomes are regularly measured and are then assessed against their objectives based on direct and indirect measures. At the same time, they are also training their faculty through their CAPSL Program in new teaching methods aligned with the updated curriculum.

#### **10. Amicable campus environment:**



The campus provides an ideal environment for young minds to explore new ideas, and encourages creativity and independent thinking, even as it facilitates faculty to engage in research that combines both rigor and relevance; the staff to cultivate empathy toward students, and for all to develop the twin qualities of a life-long yearning for learning and a compassionate and caring attitude towards fellow human beings.

### **TIET Weaknesses**

TIET recognises the existence of a number of weaknesses and potential challenges, arising from a rapidly changing and globalizing environment for higher education, which will need to be addressed in order to support the realization of the vision of excellence embodied in the strategic plan.

#### **1. Program innovation:**

Majority of the academic programs delivered by the institute are not uniformly strong or equally relevant to the preparation of graduates for a distinguished career in some of the emerging and exciting fields/sectors, or to support the flourishing knowledge-driven global economy in the new century. There is a need to review, revise and reinvigorate our existing academic programs and to phase out those that are relatively weak and no longer viable. Equally important is the need to create strong and academically vigorous programs, especially in promising new fields, that will appeal to bright and ambitious students. In order to overcome this weakness, as a first step TIET has undertaken harmonization of curriculum to bring it up to date with global standards in collaboration with Trinity College Dublin. TIET also undertook an academic review of the engineering departments with an objective to identify the gaps between the current performance and targeted performance levels. The review process covered review of curriculum, research, staffing, infrastructure, governance, academic and administrative decision making, strategic and implementation planning encompassing much of the entire academic culture of the institute.

#### **2. Funding sources:**

TIET has been relying primarily on fee revenue, which makes it over reliant on teaching orientation only and may not provide them with sufficient funding sources which are required for top quality research. In order to enhance the institution's capacity to compete globally, nationally and locally, it is imperative that we attract funding from alternative sources to improve our facilities and support innovative projects in order to attract the best and most diverse range of students, as well as to hire the quantity and quality of international faculty required. TIET has already taken up initiatives focused on raising alumni endowments and philanthropic commitments.

#### **3. Multiple layers of networks and connects with global academic community:**

TIET's faculty is engaged in research with collaborators and top researchers from across the world allowing TIET a strong international reach but TIET has not been able to leverage its faculty connects to institutionalise tie ups with global institutions. There has been only a recent streamlined effort to channelize these connects towards better institutional relationships. In order to organise existing connects and partnerships TIET is working to build a team at the institutional level to develop industry and institution connects that can be leveraged by multiple stakeholders at the institute.

#### **4. Limited industry interaction:**

Outward communication with industry majorly for placement purposes undertaken by CILP. There is limited outreach towards industry connect for activities other than placements (such as live projects, internships, small scale problem solving, consulting etc.). The number of faculty with industry experience is much higher in an Indian context, but is limited as compared to global peers. To address the above mentioned weakness, TIET is in the process to restructure industry engagement function to play a bigger role. The industry engagement function will work towards offering industry exposure to students at multiple touch points through their student life cycle, with placements as only one aspect.

## **5. Alumni Interaction:**

Although TIET boasts of over 40000 alumni over 61 batches in the last 65 years, the connect with some of the older batches is limited. While there have been multiple outreach activities in the recent past, the alumni network has not been leveraged fully – specially in comparison to the top universities with a similar legacy. Accordingly, their activities and successes have also been limited—as measured by the number of donors and levels of donations in the annual giving programs. TIET has already tackled the above by providing all the required support to the alumni office team on campus, it has also created an endowment policy that is alumni friendly and encourages participation and contribution. Going forward TIET aims to identify alumni ambassadors for regions, who will convene chapter meeting and events more frequently.

## **6. Limited experience in commercialisation of research:**

While TIET has a good research output, TIET has made limited progress in filing patents and commercialization of research. This is a far cry from the global universities where almost a quarter of the revenue comes from IP and patent monetisation in some cases. This also leads to better recognition of the applied research being undertaken at an institute. TIET has taken favorable measures to strengthen the research culture, initiatives include:

- Earmarked capital expenditure for high end research laboratories
- Plan for settling up four centres of excellence in identified areas (such as robotics & mechatronics, big data, smart cities, foot technology)
- Multiple research focused collaborations with top global institutions
- An innovation centre/venture lab to run accelerator programs open to teams with early stage business ideas to develop investor- ready ventures

## **7. Limited inter-disciplinary research and inter department integration:**

There exist limited interaction and collaboration for research between academic/administrative or between departments. In today's ever changing digital world this often act as bottle necks and costs individuals additional effort at multiple instances. TIET aims to address the above by fostering and facilitating better communication. It would also offer a means for TIET to be better informed about activities taking place across campus.

## **8. Faculty student ratio:**

The current faculty to student ratio at TIET is 17.68, which is much higher than leading world class institutions. TIET has been focused on recruiting quality faculty across disciplines, (talk about growth in number over the recent past). To attract quality faculty, the institute has undertaken various initiatives such as recruitment drives to hire candidates from NITs/IITs, competitive remuneration, workload model

## **TIET Opportunities**

### **1. Globalization:**

One of the major outcomes of globalization is the emergence of a global free market in higher education, resulting in the blurring of cultural, intellectual, spatial, temporal boundaries. This provides further incentives and opportunities for TIET to develop closer cross-border, cross-national and cross-institutional collaborations to expand its academic programs, research, and technology transfer, to prepare its graduates into well-informed citizens and leading professionals, ready to engage with the global community. Rapidly changing future of jobs has put existing universities at back foot where they either have to change and grow rapidly or cease to exist. This provides an opportunity for TIET where



it can innovate and move ahead of its competitors and address the challenges of changing student preferences, emergence of new learning models and changing industry demands and employability scenarios.

## **2. Alumni involvement and support:**

TIET's visibility and reputation and the interest and involvement of its alumni have increased drastically in the last few decades. Yet, there is far more potential. TIET established its alumni association only XX years back. Alumni are still a partly untapped opportunity for the institution as there is a possibility of initiating multiple engagements to gauge alumni support.

## **3. Power of technology:**

TIET has a special opportunity to build on its strengths in technology and technology related fields to influence many aspects of university life. A first-rate technology infrastructure combined with an array of applications that integrate education, research, and administrative operations have the potential of moving TIET to a leadership position nationally and globally. Embracing the power of technology will improve the learning experience of students, open new paradigms for the use of technology in research and expand the institute's reach and enhance the effectiveness of its administrative processes.

## **4. Partnerships & Collaborations:**

There exists a vast opportunity that is yet to be explored with from partnerships and collaboration with organizations or academic institutions. Collaborations will benefit all stakeholders at the institute - faculty, staff, and students. TIET could partner and collaborate with many more institutions to deliver better overall service quality and increased global exposure. Expanded global focus on partnerships will allow TIET to gain fresh perspective and learn from the best of the best in every area.

## **5. The non-traditional student:**

Student demographics are evolving rapidly; higher education across the world is witnessing growth in the number of "non-traditional" students. The non-traditional student demands affordable learning solutions with flexible and multidisciplinary course offerings. Catering to the needs of this growing segment is a potential opportunity which will give TIET the first mover advantage amongst its peers.

## **TIET Threats**

### **1. Academic administration skills:**

There is a lack of trained education specialists with non-academic skills who can drive the agenda of an educational institution and manage the administration of the institute adequately with a sense of sensitivity. This threat is even more prominent for Indian institutions like TIET, which are located in non-metropolitan areas.

### **2. Compliance with frequently changing regulations:**

Regulatory changes resulting from policy alterations and new regulations coming in are a constant threat to an institution like TIET, which may be privately managed but are governed by multiple government regulations. For example, due to the regulated nature of course offering by universities - there is only limited change in curriculum that can be carried out at the institution level.

### **3. Talent is now transnational:**

With a limited pool of qualified, quality faculty, there is an increased global competition for quality faculty, which is set to rise as all institutes are looking to enhance their institutions and by recruiting new faculty and retaining existing faculty with innovative techniques and propositions. There is a constant risk of losing prominent faculty and staff for genuinely better opportunities at other universities or locally. There also exists a great deal of competition from institutes in near-by areas both at the times of faculty recruitment and student recruitment.

#### **4. Cost of education:**

To keep pace with the growing needs for students and rising cost of education there is a need for the institute to explore and offer cost-effective learning and better employability solutions to students.

#### **5. Future of jobs:**

There is great uncertainty in industry requirements even in the near future. What students are taught today may even become redundant overnight. The current system HE system is not responsive and agile enough to cater to the changing skill requirements. 65% of children joining a primary school today will end up working in completely new jobs that do not exist today. Therefore, in the ever-changing job market and industry, it is imperative that the higher education system adapts itself to the new paradigm of imparting life skills and imbining analytical thinking process among the learners — to prepare them for any jobs that they may take up in their working lives.

#### **6. Dynamic Technology:**

Changing technology is a threat that will be ever present. Failure to support and adapt to emerging technologies will adversely affect the institutions' performance efficiency. Ever-changing technology triggers a need for innovative teaching methods and better learning opportunities in transforming student demands. Finally, increased reliance on digital sources and platforms like cloud services introduce a number of threats concerning loss of control over availability and data security.

#### **Abbreviations:**

CAS	-	Career Advanced Scheme
CAT	-	Common Admission Test
CBCS	-	Choice Based Credit System
CE	-	Centre for Excellence
COP	-	Career Oriented Programme
CPE	-	College with Potential for Excellence
DPE	-	Department with Potential for Excellence
GATE	-	Graduate Aptitude Test
NET	-	National Eligibility Test
PEI	-	Physical Education Institution
SAP	-	Special Assistance Programme
SF	-	Self Financing
SLET	-	State Level Eligibility Test
TEI	-	Teacher Education Institution
UPE	-	University with Potential Excellence
UPSC	-	Union Public Service Commission

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