2018

Annual Quality Assurance Report

TU

Thapar Institute of Engineering &

Technology, Patiala

11/10/2018

The Annual Quality Assurance Report (AQAR) of the IQAC – 2017-18

Part – A

AQAR for the year 2017-18

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

Contact Nos.: 9815604119

Name of the Head of the Institution: Prof. Prakash Gopalan

Tel. No. with STD Code: 0175 2393001

Mobile: 8283827635

Dr Ajay Batish

Name of the IQAC Co-ordinator:

Mobile: 9815604119

IQAC e-mail address: abatish@thapar.edu

1.3 **NAAC Track ID** *(For ex. MHCOGN 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 20-12-2017.

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	1st Cycle	B++		2002	5 years
2	2nd Cycle	A	3.15	2009	5 years
3	3rd Cycle	A	3.14	2016	5 years
4	4th 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 2010-11submitted 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 [ ] U [ ]C 2(f) U[ ]C 12B

Grant-in-aid + Self Financing [√] Totally Self-financing [ ]

1.10 Type of Faculty/Programme

Arts [ ] Science [√] Commer[ ] L[ ] PEI (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	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 Community representatives	0
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. 3 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

2.13Seminars and Conferences (only quality related)

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

Total Nos.	International	National	State	Institution Level
2				2

(ii) Themes | Quality Improvement & Contemporization

2.14 Significant Activities and contributions made by IQAC

Attached as annexure-I

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
Attached as annexure II	

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

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 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	16 (BE/BTECH)	1	All	All
PG Diploma				
Advanced Diploma				
Diploma				
Certificate				
Others				
Total	46	2		

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 [√] Parents [ ] Employers [√] Students [√]
(On all aspects)

Mode of feedback : Online [√] Manual [ ] Co-operating schools (for PEI) [ ]

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.

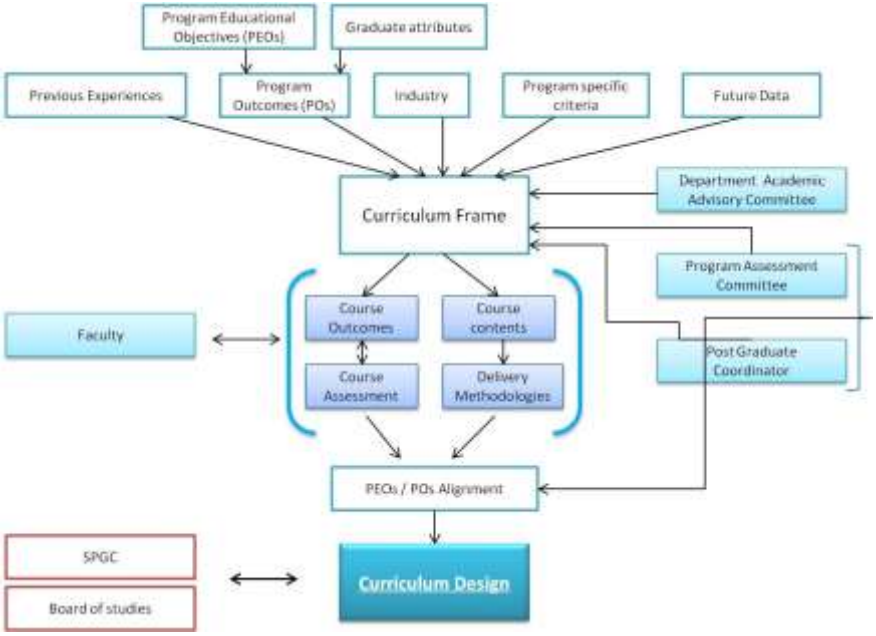
The output documents like curriculum and instructional strategies are reviewed and approved before release at various levels and stages. Reviews are conducted at defined stages of the curriculum Design, in which faculty members from the concerned area as well as experts from amongst the peer group from 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

Recently Trinity Academic and Administrative Review Team undertook an annual review visit to Thapar Institute of Engineering and Technology (TIET) from 25th-28th February 2018. The purpose of this report is to update and extend previous reports (November 2014, February 2016, and January 2017). In its components, the reviewers have sought to:

I. Assess the structure and effectiveness of administrative support available to academic units at TIET;
II. Evaluate and report on the continuing TIET contemporisation project;
III. Provide an updated review of the Computer Science, Electronic & Communication Engineering, Civil Engineering and Mechanical Engineering academic departments for the period 2017-2018;
IV. Appraise TIET staff participation within the CAPSL staff development programme and evaluate the impact of the programme on teaching delivery at TIET.

A 15-member Trinity team visited Thapar Institute Members following an overview and consideration of major findings, this Academic Review Report considers matters relating to professionalizing the academic support structure within Thapar, reviews the impact of the CAPSL programme, and considers the role of industry as an academic partner. The Report then focuses more closely on academic reviews at departmental level. This year, the Trinity team has foregrounded a set of recommendations within each section of the report to provide an executive summary of the conclusions drawn, followed by more in-depth analysis of the subject under consideration. 5 As with previous Academic Review Reports, the findings documented here are based on a series of meetings including plenary, discipline-specific, and management level gatherings, as well as visits to laboratories and new buildings on the Thapar campus. The meetings and visits covered all aspects

relevant to the academic mission of Thapar but with particular reference to the overall contemporisation project. Indeed, it could be stated that the overriding goal for this visit was an investigation of the state of contemporisation, where it now stands, and where it is going. The main outcome to be noted from the very outset is that there has been a significant move forwards on contemporisation. We have seen convincing evidence that the project, in overall terms, is gathering momentum, principally because it is underpinned by

i. A commitment of resources, both current and future;
ii. The development of an increasing number of strands to the project;
iii. Evidence of strategic thinking in how the strands are linked together.

As in previous such documents, this Report will note where distinct progress has been made, but also where the Review Team believes there is further work to be carried out. Specific recommendations are made as appropriate.

Among the progressions to contemporisation observed, the following are particularly noted:

• A significantly developed version of an institutional Strategic Plan with refinements to the vision and aspects of the Plan extending to beyond the customary 5-year window for such statements.
• Diversification of academic activity into other disciplines such as law, psychology, architecture, and pharmacy.
• The outline of an ambitious research Plan based on a number of specific themes and linked to Research Centres. These Research Centres will in turn be linked to international partners and underpinned by funded professorial positions.
• Continued major progress on the physical infrastructure. Three new accommodation blocks are already on stream and later this year the teaching & learning building will open followed by the Computer Science and Engineering building and the new library. The architectural integration of these buildings forms an impressive sight.
• Among the commendable student oriented initiatives reported, the following were prominent: - Venture Labs, including plans for a new purpose-built venture laboratory building;
- Experiential Learning activities which in turn are very close in concept to project-based learning activities which we have previously advocated;
- The embedding of the Innovation module for all engineering students;
- The initiative with Tata Motors in support of master's degree projects in Mechanical Engineering.

Significant progress can also be recorded in respect of CAPSL-related activities under the banner of the New Directions programme. Two batches of academic staff have completed the foundation programme with a third batch commenced. A team of five teaching fellows drawn from the first batch are completing a train-the-trainers programme and will be deployed in further embedding the New Directions gains within Thapar and in building a sustainable CAPSL style base in Thapar. Of course, much further work is required in changing the overall teaching culture towards a "smarter" orientation but, with top-down institutional support complementing the bottom-up achievements to date, a solid environment has been created for producing the desired change in teaching style across the institution. Staying in the CAPSL domain, particular note has been taken of two recurrent issues which arise at the workshops: large group teaching and mapping the CAPSL content into specific technical disciplines. Trinity undertakes to give these issues due attention when devising further CAPSL activities for Thapar staff. Progress can also be reported on the introduction of professional administrative structures. A support group has been put in place to assist the Dean of Contemporisation and Accreditation, Professor Batish, while a suitably qualified graduate has been recruited to provide administrative support for the Department of Computer Science and Engineering. The Review Team looks forward to an assessment of how this appointment impacts on the operation of the department.

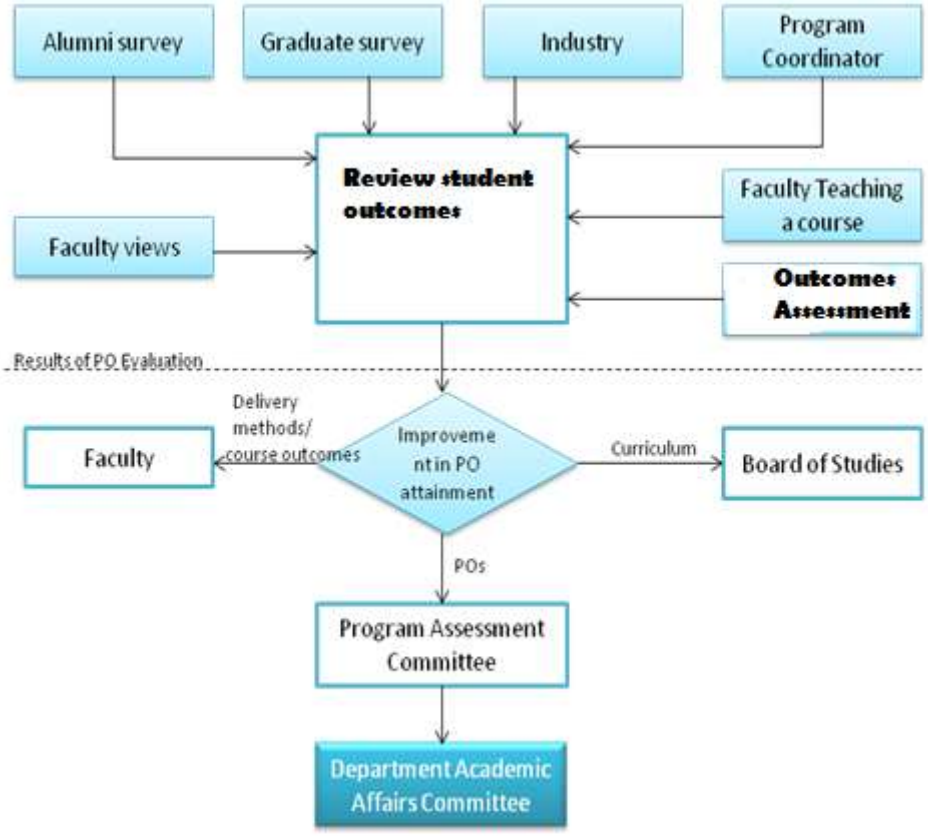
Figure below illustrates the process of revising/redefining existing student outcomes and the role of program faculty in implementing these. The need to revise / redefine of student outcomes is identified

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.

Experiential Learning Centre:

Thapar Institute of Engineering and Technology has initiated the concept of Experiential Learning in January 2018 for undergraduate engineering students to enable students learn, understand and actively engage in engineering design activities through direct use of industrial grade machines/ equipment. These activities are being organised under the supervision of Dr. Sanjeev Bedi, Professor, University of Waterloo, Canada and Dr. Ajay Batish, Deputy Director, TIET and has taken a formal shape under the Experiential Learning Center (ELC). In May 2018, ELC has been further strengthened with the

induction of Dr. S.K. Mohapatra (Sr. Professor, MED) as Coordinator, and Mr. A.S. Jawanda (Associate Professor, MED) and Dr. R. K. Duvedi (Assistant Professor, MED) as Associate Coordinators with a mandate to assist the various departments to plan and execute the experiential learning initiatives.

Mechanical Department at TIET has taken the lead in initiating a number of experiential activities and summer internship projects for all undergraduate engineering students of TIET. These initiatives has been supervised by an interdisciplinary team of motivated faculty volunteers from all engineering disciplines. The ELC activities initiated with the Engine Dissection activity which is conducted 4 times in the last semester (Jan-May) for 430 students on 12thFeb (for BE Mechanical, Production, and Mechatronics) , 26th Feb (BE Mechatronics, and Electrical), 23rd April (3rd Year Mechanical students of TPC). Some trial projects which can be taken up as future activities for MED students were also conducted during Jan-May 2018 and are listed below:

1. Design of a solar water heating system
2. Bicycle dissection and assembly
3. Design of a double column hydraulic lift of automobile servicing
4. Design competition for E-transportation system for TIET
5. Design of a two axis CNC table
6. Design of a modular semi-automatic drill machine
7. Design and manufacturing of wood stove for room heating
8. Design and manufacturing of a general purpose bearing puller
9. Design and fabrication of folding table for ELC activities
10. Design of plate heat exchanger

During summer vacation June-July 2018, we have executed trials for various activities to be undertaken as experiential activity in the coming semesters. These included:

1. Design of Brushless DC Motor and controller – Mechanical and Mechatronics Engineering Student
2. Assembly of a modular CNC machine structure, electrical and electronics components - Mechanical and Mechatronics Engineering Student
3. Bi-cycle dissection and assembly - Mechanical and Mechatronics Engineering Student
4. Power Supply design and fabrication (Electronics students)
5. Design and fabrication of Radio transmitter and receiver (Electronics students)

Major Internships Projects undertaken during summer vacations June-July 2018

1. Jeep project: 24 students are working for conversion of an IC engines based all-terrain sports utility vehicle to an electrical vehicle.
2. E-transportation system (entrepreneurial-transportation system) – Team AEDI and Team RISCIO with 10 students in each are working for developing the first stage prototype for e-transportation system.
3. Design of a bicycle sharing concept using a mobile app - GoGo Bikes: 4 of Mechanical and Mechatronics Engineering Student working on this project.

The ELC activities planned for under graduate students of Mechanical Engineering Department for the academic year 2018 are listed below along with the faculty responsible for execution of these activities:

List of ELC activities for MED			
		MED	**MEDFaculty assigned**
1st Sem			
1	8 Hours	Bike (Axle/Handle bar+Improved Rear Susp) +Bike design for Physically chanllenged person	Dr. Supreet Bhullar Dr. Vinod Kumar Singla Dr. Daljit Singh Dr. Kundan Lal Rana Dr. Ravinder S. Joshi Dr. Sachin Singh
2	8 Hours		
2nd Sem		**201 C (ME)**	
1	8 Hours	Engine/G.Box/Susp/ Brake	Mr. Sumit Sharma Dr. Devender Kumar Dr. Gagandeep Bhardwaj
2	8 Hours		
3rd Sem		**301 C (ME)**	
1	8 Hours	Pneumatic M/c Structure/ Design & build Chair testing facility	Dr. Anant Kumar Singh Dr. Ratnesh Kumar Dr. Munish Kumar
2	8 Hours		
4th Sem		**401 C (ME)**	
1	8 Hours	Dism/Assem of 3 -axis CNC M/c	Dr. Vivek Jain Dr. Jaswinder Singh Saini Dr. Ravinder Kumar Duvedi
2	8 Hours		
5th Sem		**501 C (ME)**	
1	8 Hours	M/c design Activities like: Hydraulic Lift, E-Bike, Solar collector & Tracker, Heat Exchanger	Mr. A. S. Jawanda Mr. Bikramjit Singh Dr. Vikrant Khullar Dr. Rohit Singla
2	8 Hours		
6th Sem		**601 C (ME)**	
1	8 Hours	Design analytics intensive activities like: Quarter Car problem, Trailer Problem	Dr. Tarun Kumar Bera Dr. Ashish Singla Dr. Neeraj Kumar
2	8 Hours		

Venture Lab:

Embedding Entrepreneurship in Engineering Education for creating start-ups and developing entrepreneurial mind-set.

An exciting programme started through Venture Lab aims to nurture and support entrepreneurs within and outside the campus has been conceptualized at TIET. This is a journey of three years involving the following different tracks:

Startup Studio: An extracurricular evening with eminent entrepreneurs who will visit the campus once a month and share their experiences and life journey with interested students of B.Tech II Year. These eight meetings during the whole year would include: interesting talks, videos, activities, role-plays, games, experiential learning about creating a start-up with lots of fun and participation.

Innovation & Entrepreneurship: This regular course to be offered in third year to equip you with fundamentals for establishing a start-up, if you ever decide to do so. Students also undertake a project and apply their classroom learning (one session a week) in the tutorials to work on real/virtual business idea.

Startup Track: Select few students who want to further develop their startup idea will create an app/prototype/working model at the campus for six months during their project semester. This is considered equivalent to project semester and evaluated in the same manner. Students are supported with need based skill trainings and other competency building workshop by industry experts & senior professionals.

Setting up of Design and Venture Lab: A comprehensive Design and Venture Lab has been established with adequate infrastructure in the current STEP complex to provide a platform to students to ideate, prototype and create their ventures. It is equipped with 3-D printers and other manufacturing related machines so that students can create actual prototypes.

Organizational Structure: As a comprehensive programme for strengthening Entrepreneurial Promotion Programme has been rolled out. An organization structure to integrate the Venture Lab, STEP and Entrepreneurial Development Cell (ED Cell) is in place to spearhead the entrepreneurial programmes and activities initiated and activated at TIET.

The following programmes/initiatives and activities have been operationalized at Thapar Institute of Engineering & Technology (Deemed to be University) to strengthen entrepreneurial ecosystem at the TIET campus.

Embedding Entrepreneurship in Engineering Education: A comprehensive programme to embed entrepreneurship in the B.Tech programme has been initiated with University of Groningen (UoG) and Venture Lab, the Netherlands.

A faculty delegation comprising of 10 faculty from different streams of engineering and LM TSM led by Prof. Ajay Batish and Prof. Padmakumar Nair visited UoG from March 20, 2016 to April 20, 2016 to develop curriculum and pedagogy for its replication at Thapar Institute of Engineering and Technology. On similar lines two more groups of faculty went to the University of Groningen (UoG) in 2017 and 2018.

During the visit the faculty attended sessions at the university and experience how the entrepreneurship is taught at UoG and also how the Startups are nurtured at the Venture Lab and the Design Lab of the university campus. The detailed curriculum developed during this month long visit are also appended with.

Faculty also attended the Startup Weekend a three-day pitching competition being organized by UoG at the Venture Lab so as to develop their competence to organize similar events back at Thapar University.

1.6 Programs Conducted During the Academic Year July 2017- June 2018

ACADEMIC PROGRAMMES

The University as of date offers 11 undergraduate 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 & communication engineering
Electronics (instrumentation & control) engineering
Mechanical engineering
Biochemical engineering
Mechanical engineering (production)
Electronics and computer engineering

Integrated Programs

Civil engineering
Computer engineering
Electrical engineering
Electronics & communication engineering
Mechanical engineering

Postgraduate

ME/MTech

Biotechnology
Metallurgical & materials engineering
Environmental science & technology
Energy technology and management
VLSI design
Chemical engineering
Computer applications
CAD/CAM engineering
Structural engineering
Infrastructure engineering
Electronics & communication engineering

Wireless communications
Production engineering
Software engineering
Electronic instrumentation & control engineering
Computer science & engineering
Power systems
Power electronics and drives
Thermal engineering
Information security

MSc

Biotechnology
Chemistry
Mathematics and computing
Physics
Biochemistry
Mca
Psychology
Economics

MBA

Phd in all programs

Criterion – II

2. Teaching, Learning and Evaluation

2.1 Total No. of permanent faculty:

	Prof.	**Assoc. Prof.**	**Asstt. Prof.**
Dept. of Biotechnology	5	3	2
Dept. of Civil Engineering	3	7	7
Dept. of Chemical Engineering	4	5	5
Dept. of Computer Sc. and Engineering	6	9	33
Dept. of Electronics and Communication Engineering	4	8	28
Dept. of Electrical and Instrumentation Engineering	2	7	25
Dept. of Mechanical Engineering	3	15	28
School of Chemistry and Biochemistry	4	5	5
School of Mathematics	2	5	14
School of Humanities and Social	2	0	8

Sciences			
School of Physics and Materials Science	3	8	8
School of Energy and Environment	2	3	1
LMTSoM	1	2	12

Total	Asst. Professors	Associate Professors	Prof	Others (Visiting Professors & Lecturer)
423	176	77	41	129

2.2 No. of permanent faculty with Ph.D. 310

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

Details Of Teaching & Non-Teaching Staff Of University

	Teaching Faculty											
	Professor				**Associate Professor**				**Assistant Professor**			
	Male	Female	Others	Total	Male	Female	Others	Total	Male	Female	Others	Total
Sanctioned				51				102				307
Recruited	35	6	0	41	63	14	0	77	203	100	0	303
Yet to Recruit				10				25				4
On Contract	1	1	0	2	0	0	0	0	77	49	0	126

Non-Teaching Staff				
	Male	**Female**	**Others**	**Total**
Sanctioned				490
Recruited	444	46	0	490
Yet to Recruit				0
On Contract	236	0	0	236

Technical Staff				
	Male	**Female**	**Others**	**Total**
Sanctioned				103
Recruited	95	8	0	103
Yet to Recruit				0
On Contract	52	8	0	60

2.4 No. of Guest and Visiting faculty and Temporary faculty

89		

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:

Innovation Process - I

To prepare TIET faculty for a student-centred approach to learning, through a programme of workshops that promotes professional development and acquisition of key skills.

Objectives of the Practice

What are the objectives/intended outcomes of this "best practice" and what are the underlying principles or concepts of this practice (in about 100 words)? TIET's contemporisation programme is committed to further develop, among other things, its teaching, learning and research culture. At the moment, TIET is committed to deliver a full change and development programme that will contribute to the realization of this aspect of the contemporisation programme. This programme is running under the academic mentorship of Trinity College Dublin. Following a comprehensive needs analysis conducted by survey, workshops, and consultation meetings we now have a better understanding of the development needs, and as a

result a tailor bespoke programme has been developed that is delivering more meaningful results for Thapar. We believe that simply delivering modules will not address the culture and organization changes that will need to happen if Thapar is to realize the teaching, learning and research objectives of its contemporisation programme. We need an approach that develops a teaching, learning and research culture that builds on existing strengths within Thapar and that also addresses gaps. The first priority is to address with Thapar staff the paradigm shift needed from teaching to learning, and to teaching, learning and research, shifting emphasis from teachers as content experts to teachers as facilitators of student-centred learning. This will support a whole-institutional approach to teaching and learning and facilitate a broad adoption of this new learning paradigm.

The Context

What were the contextual features or challenging issues that needed to be addressed in designing and implementing this practice (in about 150 words)? The needs analysis showed that the challenges of achieving change in teaching & learning at TIET are multifaceted, partly due to the foundational level of the starting point at Thapar, partly due to the weight of work needed to be addressed to ensure change at an institutional level, and partly due the necessity to do things very differently. While professional development can provide a foundational springboard for academics in the area of teaching and effective learning, survey analysis and focus groups showed that a cultural shift in TIET is needed in order to achieve its strategic teaching and research goals – in short, the 'teaching' culture needs to change to a 'teaching & learning' culture.

Broad-scale change

There is undoubtedly opportunity for Thapar to enact a broader teaching & learning role; however, change of this magnitude needs a focus not just on professional development of individual teachers, but on institutional approaches to teaching & learning. A concentration on professional development alone will certainly have impact, but impact will be at the individual level (those who attend professional development modules); change of this scale needs to impact more than one academic at a time. Professional development should not be the final destination but the means to positively impact teaching & learning at multiple levels. Changing professoriate is only one piece of the puzzle. Change in the nature of learning and scholarship at Thapar also needs to be addressed. The challenges facing TIET called for a cultural shift in paradigms, and a parallel change in the structures that uphold them.

The Practice

Describe the practice and its uniqueness in the context of India higher education. What were the constraints/limitations, if any, faced (in about 400words)? TIET is supporting teachers through workshops and programmes that improves or changes their individual perspectives on student learning. It was paramount to develop a teaching & learning framework that will facilitate the adoption and implementation of new and sustainable learning paradigms – particularly in the area of learner-centred approaches, active learning, curriculum and assessment.

Constraints: Thapar up till 2015, like most Indian Institutions, promoted teacher-centred learning, and the teaching-research nexus was distinctly skewed in favour of teaching. Without a bespoke teaching & learning framework designed for and with Thapar to inform a teaching & learning strategy over an ample time period, fulfilment of a rigorous research and contemporisation agenda was less likely to succeed.

Based on the needs analysis report, TIET has conducted for all its staff teaching and learning modules in the following areas:

- Assessment
- Curriculum
- Teaching-research nexus
- Class management/large group teaching
- Learner-centred teaching
- Professional Development.

Evidence of Success

TIET faculty has completed five core workshops during the course (Summative; i.e. assessed):

- Student-Centred Learning
- Assessment
- Curriculum
- Outcomes Based Approach to Student Learning
- Sharing scholarship in teaching and learning

Other than the above five core modules, at least two optional workshops were completed during the course (Formative; skills will complement and feed into the core modules):

- Creative Thinking
- Supporting Group Work

The programme of workshops (both core and optional) has been completed in groups of 100 (divided into sub-groups of 20 each) during each year beginning 2016. The one year 'window' was to allow time for faculty reflection on the workshops and implementation of some of these new approaches into educational practice. This was also to allow time for meaningful feedback on assessed assignments to be provided to participants in follow on support after the programme is completed.

TIET has formally established Community of Practices (CoPs) of existing groups to revisit issues addressed in the various posters and / or could focus on assignments in terms of each person summarizing what they did and having a wider discussion. These CoPs have become self-organizing and self-sustaining; participants identify topics they want to focus on and discuss.

Lunch time teaching and learning seminar are scheduled at least once a month for all faculty at Thapar which consist of 15-20 mins talk and wider discussion. Distinction holders or enthusiastic volunteers are engaged in helping to mentor the subsequent batch. Two graduates of first batch are associated with each group of the second batch. During the poster prep sessions held in November every year, the previous batch posters are revisited e.g. In terms of their experience of the process and the product.

Problems Encountered and Resources Required Please identify the problems encountered and resources required to implement the practice (inabout150words). Not many problems were encountered during the implementation except some resistance from older and more experienced faculty about the need for a program of this type. This was however only in the initial stages of implementation in 2015 but everyone has been convinced now of its usefulness. TIET had earmarked adequate resources for the project.

Innovative Process - II

Project Semester- A Six-Month Internship programme aimed at carrying out projects and problem solving in industry.

Objectives of the Practice

What are the objectives/intended outcomes of this "best practice" and what are the underlying principles or concepts of this practice? Objectives of the project semester programme are to:

- expose the students to industrial working and the practical aspects of theoretical knowledge and skills they acquire in the Institute
- involve the students in industrial problem solving through systematic analysis and development of innovative solutions under the guidance of industry experts
- make students industry ready not only in technical aspects but also interpersonal skills, communication skills, team work, and project orientation
- improve contacts with industry through joint mentoring of student projects by industry mentors and a faculty mentor and use these contacts for improving curriculum and other aspects of teaching-learning process

Underlying principles or concepts of the practice: It is a fact that learning process becomes more effective if one sees the relevance of the subject of study and is made a part of the application of the area studied. Six-month project semester does exactly the same. Students see the practical side of their theoretical studies as they are made responsible to improve a product or a process by using their acquired knowledge. They start taking interest and own the system. They have a sense of achievement when their projects are implemented resulting in improvement. In this process students learn a lot.

The Context

Prior to implementation of project semester of six months duration, there used to be a 6 to 8 weeks training in the curriculum of BE students. It was felt with concern that students do not take

such a training seriously and most of them were while away their time as industry also does not take them seriously. It was thought that a six-month term totally devoted to problem solving and carrying out projects would be effective. The challenges in the implementation of project semester were:

- Adjustment in curriculum by moving all courses of studies to seven semesters to make space for a project semester. This was judiciously done without compromising on the content to be taught to the students.

- Convincing industry that the students in their sixth or seventh semester had adequate knowledge and skills to carry out industrial projects aimed at problem solving and improvement and that they will be serious and could be relied upon. This was achieved through a series of visits to industry and discussion.

- Arranging training for a large number of students in companies was also a challenge. For this, industry was contacted and wherever possible, help from alumni of TIET, who were occupying high position in industry was sought.

- Since faculty was to be deployed on monitoring and evaluating the project semester, orientation programmes for them were also organized.

- To bring seriousness on the part of all stake holders including students, faculty, and industry, complete system of evaluation was evolved and properly documented. The evaluation includes maintaining a daily diary by the students, two evaluation visits by the faculty, joint evaluation in industry and final presentation in the institute.

The Practice

Describe the practice and its uniqueness in the context of India higher education. What were the constraints/limitations, if any, faced (in about 400 words)? The project semester gives the students an opportunity to translate knowledge of engineering theory into practice in a professional engineering environment. It consolidates the student's prior learning and provide a context for later work and career planning. The practice involves the following procedural steps:

1. Arranging sufficient slots in the various industrial units for project semester placement of students, in advance

2. Allocating students to various industries based on choice and merit

3. Conducting an orientation program for students before they leave for industry

4. Assigning a faculty supervisor to a group of students for mentoring, monitoring and evaluation

5. Making students, faculty mentors and industrial mentors aware about the following: • Reflective Diary to be maintained by the students.

- Interim project report

- Final report with Learning Agreement/Outcomes.
- Viva in the Institute.
- Joint evaluation by both mentors in the industry
- Preparation of goals report within one month of the start of project semester
- Mid-term report after three months of the start of project semester.
- Two faculty visits for monitoring of the work of students, first within 45 days and second in the last one month.

The students at the TIET are exposed to industry problems and problem solving while they are still studying. They learn a great deal in a six-month industry internship as compared to the 6-8 weeks of industrial training prevalent in many other engineering colleges. This learning on the part of students make them competent professional as it changes their mind set and motivates them to take their studies more seriously. These engineers are definitely better equipped to manage today's complex industry and other organization and contribute at National level than those who do not have this kind of industrial exposure. India today needs competent engineers who can help in the cause of 'Make-In-India'.

Evidence of Success

Provide evidence of success such as performance against targets and benchmarks, review results. What do these results indicate? Describe in about 200 words. Evidence of success is apparent from the following:

1. Students are deployed on prestigious projects by the industry. Industrial mentors praise the work done by students.

2. There is a visible change in the outlook and attitude of the students. They appear more knowledgeable, confident, and grounded.

3. Industry has started providing stipend to the students thus recognizing their performance. 4. Many students are offered jobs based on their performance.

5. In many cases now, request for interns come from the industry.

Problems Encountered and Resources Required

Not many problems were encountered as a thorough planning was carried out before launching the project semester programme. Of course, some small operational problems were encountered and solved. The complete planning included the following:

1. Visits to the industry for seeking slots for placement and explaining the idea of project semester.

2. Planning and documenting the project semester process, evaluation stages and other operational details.

3. Allocating funds to the activities including faculty visits and evaluation.

4. Timely visits, monitoring, and assessment

5. Timely corrections in process, wherever needed.

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 ≥ 8.5	CGPA ≥ 6.0 & < 8.5	CGPA < 6.0
2018 UG	1715	603	965	147
2017 PG	588	132	399	57
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 collects 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:

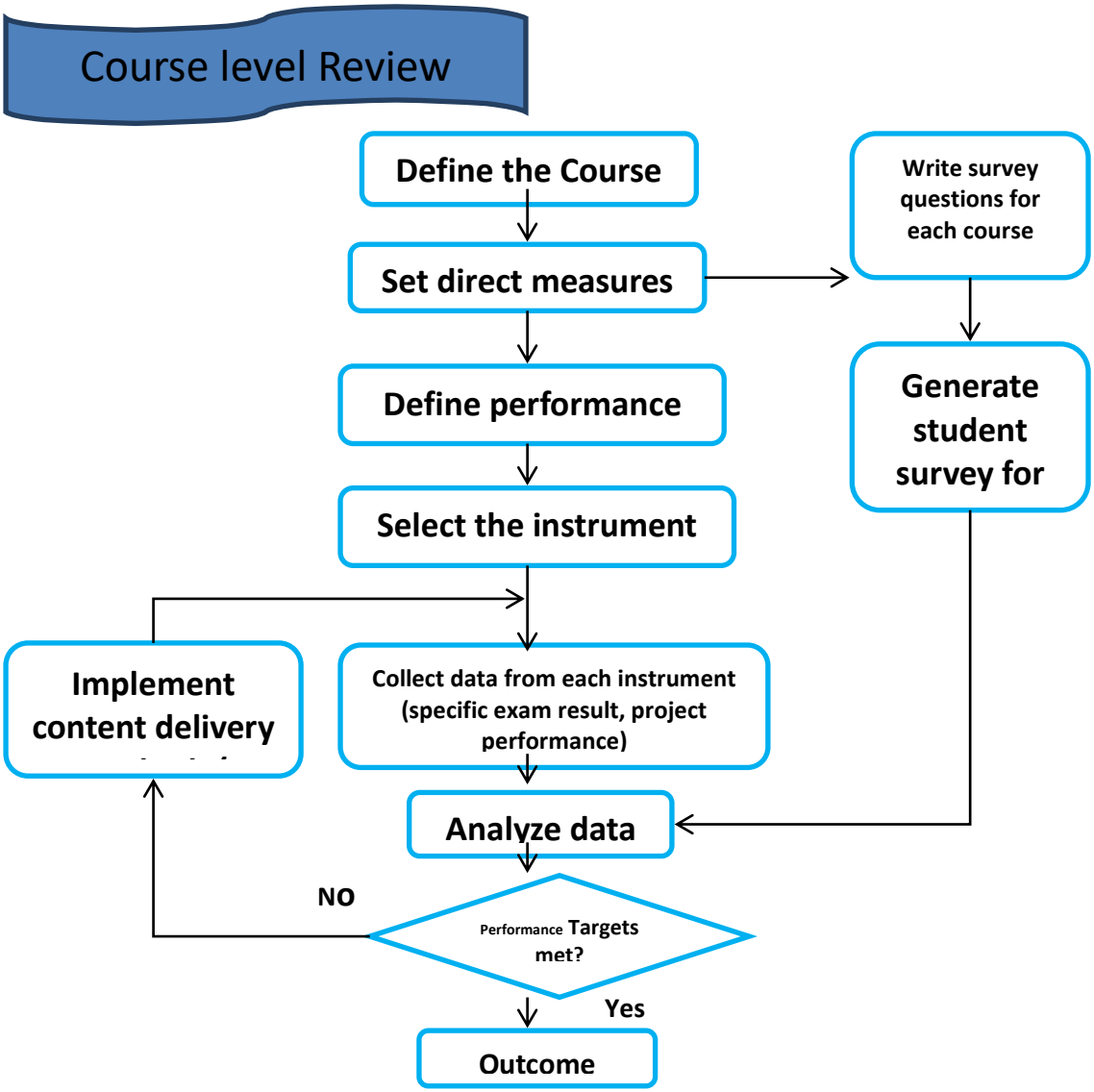


Figure 1: Assessment of attainment of CLO's for a course

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.

The step by step assessment process for assessing the attainment of outcome for measuring attainment in course A using CLO1 is explained as under:

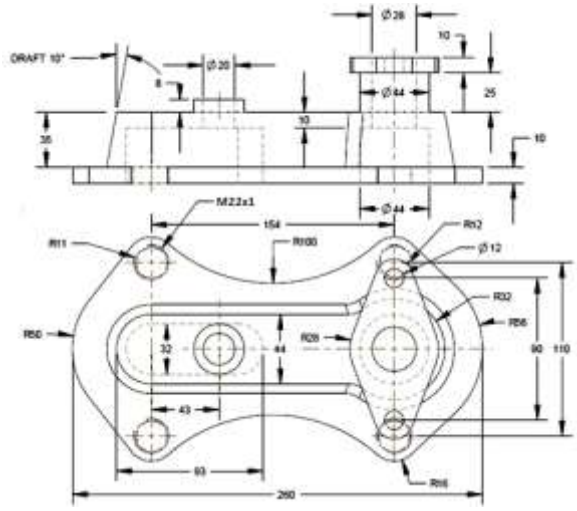
Assessment of course 'A'using CLO1

a.) Assessment Tool: Student's performance using course file

Course: Computer Aided Design (UME 401)
From the course portfolio the instructor identified the following question (Question No.:1 asked in EST, weightage 30 marks) specifically targeting CLO1 for assessing student's competency in achieving course outcome 'CLO1'.

Question:

Model the cover part below. Use pattern for the four M22 holes. To balance the weight of the part, the ∅44, 25 height pipe with the 110x R28, 10 height hydraulic joint connector above it is copied by translation to the left side of the part. Determine this translation distance.



The student performance in the above question is then analysed and the instructor scores the performance of each student using 1 to 5 rubric as shown in Table 1 below. Student's performance in the above question is given below:

Table 1: Student's performance in question targeting 'CLO1'; course: UME401

S. No.	Roll No.	Name	Marks (30)	Score (scale 1 to 5)
1.	101308083	PARAS	28	5
2.	101488012	MOHIT GOYAL	23	5
3.	101308102	SHREYAS BHAYANA	19	5
4.	101308098	SAMEER BHALLA	17	5
5.				

6.	*AND SO ON*			

The rating on a scale of 1 to 5 has been done using a rubric which gives a score of 5 to top performers and 1 to poor performers. Accordingly scale of 2, 3 and 4 can be used for those in the middle.

The overall performance of students in the above question is then summarized as given in Table 2 below.

Table 2: Average score of student performance in CLO 1 for course A

Course	**% of students in each score**					**Average Score**
	5	**4**	**3**	**2**	**1**	
CLO 1	**27.59**	**18.97**	**24.14**	**15.52**	**13.79**	**3.3**

After completing this assessment directly from the questions given to students using various instruments, we also use in-direct instruments which include student course survey to get to a final assessment score for each CLO. These scores for each CLO are then summarized to obtain the attainment level for each student outcome.

The assessment completed using the surveys for CLO 1 is also provided below:

Assessment Tool: Course survey

Table 3: Average score of student course survey for CLO1; course: UME401

Course	**% of students in each score**					**Average Score**
	5	**4**	**3**	**2**	**1**	
CLO 1	25	34.1	27.3	6.8	6.8	3.64

Step 3- (a) Weighted average from CLO's

There were three CLO's which were used to assess the attainment of course objectives for course A. The course instructor(s) then decide that each CLO contributes to attainment does so at a varying level. The faculty assigns weight on a scale of 1 to 5, describing how each CLO contributes to a particular course. Using these weights and scores from each CLO for the course, we compute the weighted average score for the CLO's using direct measurement. The sample calculation for evaluation of weighted average score of CLO 1 to CLO 3 using direct measurement is given in Table 4 below:

Table 4: Weighted Average Student class performance (course portfolio) for CLO 1 to CLO 3 for course A

Courses	**% of students in each score**					**Average Score**	**Weight**
	5	4	3	2	1		
CLO1	27.59	18.97	24.14	15.52	13.79	3.3	5
CLO2	30	38	20	6	5	3.81	5
CLO3	40	32.5	25	2.5	0	4.1	4
Weighted average score	32.00	29.63	22.91	8.40	7.88	3.71	14

(b) Weighted average from student course survey

Assessment Tool: Course Survey

Table 5: Weighted Average student course survey for CLO1 to CLO 3 for course A

Courses	% of students in each score					Average Score	Weight
	5	4	3	2	1		
CLO1	25	34.1	27.3	6.8	6.8	3.64	5
CLO2	28	59	10	0	3	4.09	5
CLO3	18	70	12	0	0	4.06	4
Weighted average score	24.07	53.25	16.75	2.43	3.50	3.92	14

Step-4: Overall weighted average score for CLO attainment for course A (for example CLO1 to CLO3 in this case)

The program faculty decided to assign weights to each assessment tool. Using these weights along with weighted average student class performance, weighted average student course survey score (from tables above) and the score, we computed the weighted average for each course and is given in Table 6.

Table 6: Overall weighted average score of course A

Assessment tools	% of students in each score					Average weighted score	Assessment tool Weight
	5	4	3	2	1		
Weighted average student class performance	32	29.63	22.91	8.4	7.88	3.71	5
Weighted average student course survey	24.07	53.25	16.75	2.43	3.5	3.92	4

Overall weighted score for A3 performance criteria is given by

$$Overall = \frac{[3.71 \times 6 + 3.92 \times 4]}{6+4} = 3.79$$

The overall score for attainment of CLO's in course A is thus 3.79 on a scale of 1 to 5.

2.13 Initiatives undertaken towards faculty development

Faculty / Staff Development Programmes	*Number of faculty benefitted*
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 Contemporization 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 Contemporization 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**)

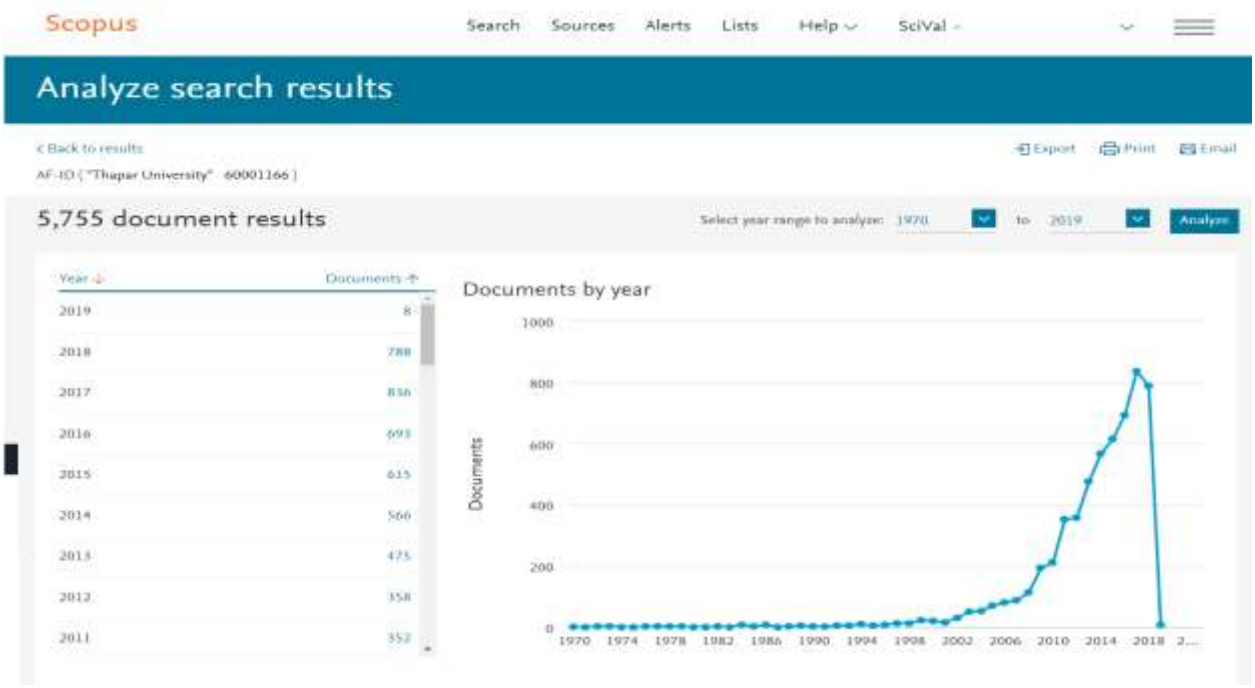
	Completed	Ongoing	Sanctioned
Number	34	111	37
Outlay in Rs. Lakhs	656.64	3864.51	1266.14

3.3 Details regarding minor projects

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

3.4 Details on research publications

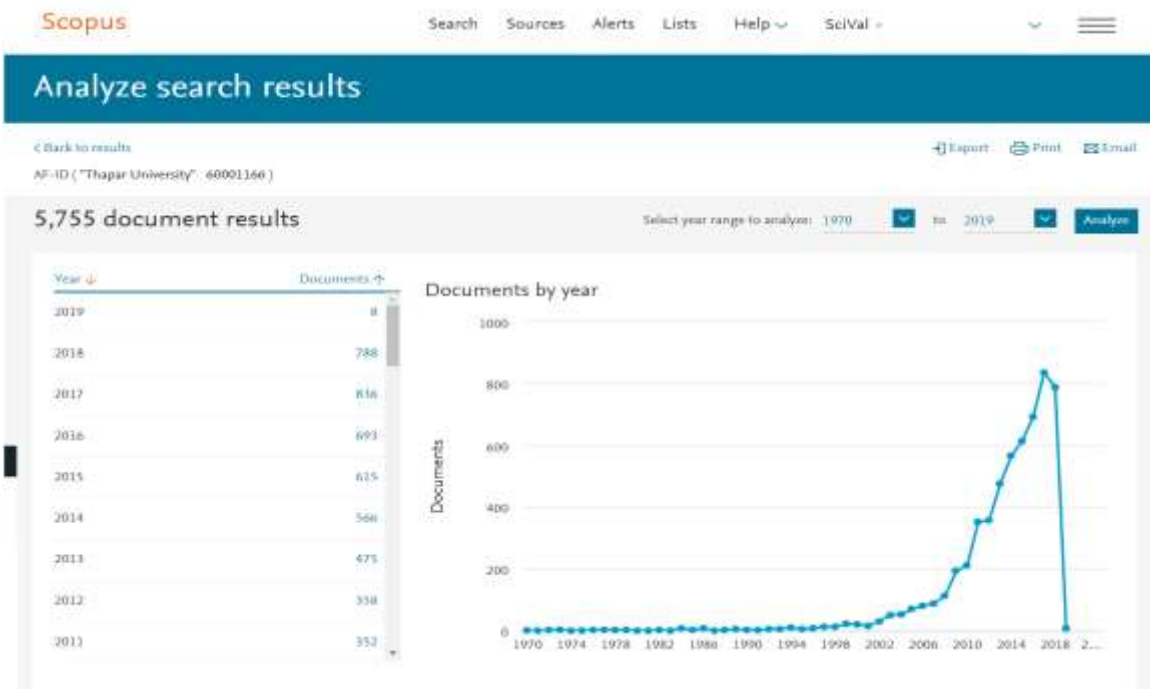
	International	National	Others
Peer Review Journals (Scopus)	836 (2017)		
Non-Peer Review Journals	299		
e-Journals	All published papers are available online.		
Conference proceedings	261	86	

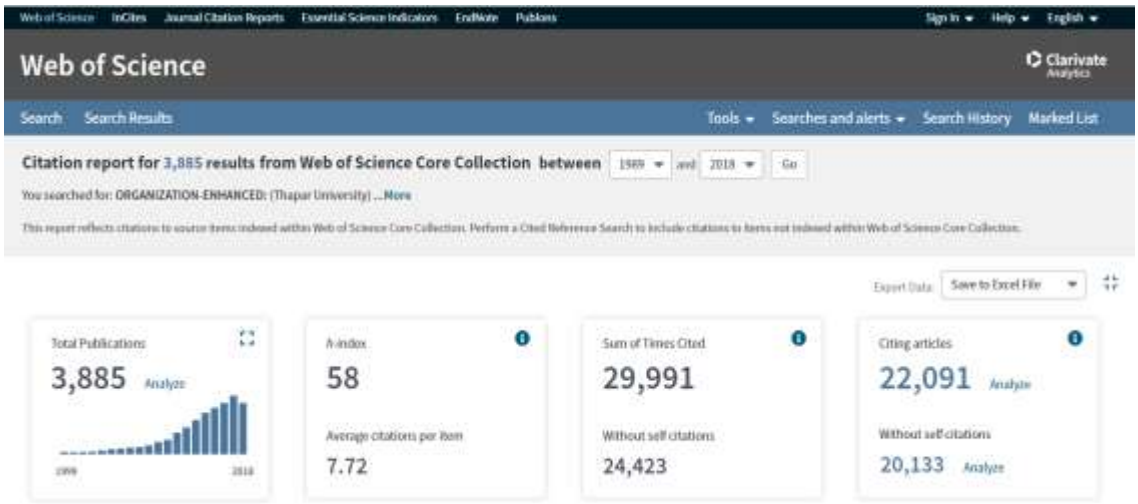


3.5 Details on Impact factor of publications:

Range 0.35-20.9 Average Citation 7.72 (WoS) h-index 58(WoS)

Nos. in SCOPUS 836





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	2017-18	CSIR, DBT, DRDO, DST, UGC, etc	Rs. 1763.88 lakhs	37
Minor Projects	2017-18		nil	nil
Interdisciplinary Projects	2017-18	--	--	---
Industry sponsored	2017-18	Industries	Rs. 174.88 Lakhs	8
Projects sponsored by the University/ College	2017-18	Thapar Institute of Engineering and Technology University	Rs. 43.4 Lakhs	9
Students research projects *(other than compulsory by the University)*	2017-18	---		
Any other(Specify)	2017-18	---		
Total			**Rs. 1982.16 Lakhs**	

3.7 No. of books published i) With ISBN No. [ ] Chapters in Edited Books [11]

ii) Without ISBN No. [-]

3.8 No. of University Departments receiving funds from

UGC-SAP		CSIR	11	DST	32
DAE	3			DBT Scheme/funds	

3.9 For colleges Autonomy CPE DBT Star Scheme

INSPIRE CE Any Other (specify)

3.10 Revenue generated through consultancy 177.31 Lakhs (2017-18)

3.11 No. of conferences organized by the Institution

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

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

3.13 No. of collaborations International 25 National 11 Any other 20

3.14 No. of linkages created during this year 4

3.15 Total budget for research for current year in lakhs:

From funding agency Rs. 17.63 Cr From Management of University/College Rs. 10.89 Cr.

Total **Rs 28.50 Cr**

3.16 No. of patents received this year

2017-18	2016-17	2015-16	2014-15	2013-14
1	5	6	7	2

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
85	30	3	2	50	----	----

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

310 788

3.19 No. of Ph.D. awarded by faculty from the Institution 70

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

JRF 80 SRF 21 Project Fellows 11 Any other: **TA** 241

2017-18	2016-17	2015-16	2014-15	2013-14
353	231	183	124	129

3.21 No. of students Participated in NSS events:

University level **1521** 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 25 College forum ---

NCC --- NSS 15 Any other 68

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

Details of activities during 2017-18

Saturnalia'17

Saturnalia started like a breeze and left like a storm and was experienced by one and all. North India's biggest techno-cultural fest started with the theme of **"Come Experience Infinity"**. The team was adamant to deliver their best. Saturnalia started organising various online events like **The Picture Perfect** (online photography event in association with **Sony Alpha**, **Thoughts Unboxed** (an online tale writing event partnered with **The Melting Words**), **Football Talkies (**that rose to international fame as well attracting thousands of audiences around the world) etc. Citing to the popular culture among the youths, Saturnalia'17 also came up with the idea of **Meme Competition**, which was later facsimiled by various college fests including fests of IIT-Delhi, IIT- Bombay, BITS Pilani and many others. Saturnalia proved to be a craze amongst everyone, including the freshers.

To celebrate the memoirs of our freedom fighters and martyrs, a tank and artillery showcase was organised in association with **Indian Army** on **Independence Day**. It proved to be quite popular amongst the students and faculties. Representatives from Indian Army also motivated students to join the army and serve the country. **Mirchi Night Run** in association with **Radio Mirchi** embarked the wave of euphoric events. The very next day, **Josh Talks** stole the show. The event was organised in association with **Facebook** and witnessed some inspiring stories by some renowned personalities, including comedian Rahul Dua, social activist Harsh Kothari and many more.

It also witnessed **Campus Princess**, in association with **fbb**, a platform provided to college girls to rise to the level of **Miss India**. Gorgeous and young ladies from all over North India swarmed in to compete for the glory. The night had it best with **Mode Infinie**, the fashion show leaving the students with a craze and lots of energy. The contestants and teams were judged by **Roshmitha Harimurthy**, Miss Universe India-2016, giving the title of the best team and the Campus Princess.

Lots of technical events were also lined up throughout the weekend. The events were designed in a way to help the students enhance their technical diaspora. Mock ICPC, Switch Coding, Capture The Flag & Reverse Coding were 4 events that constituted Technathlon, flagship event for Computer Science. It witnessed participation even from colleges like **IIIT Hyderabad, NIT- Allahabad** etc. Events like Droid Rush, Puck Collector, Bridge-It also attracted college students from as far as **Jharkhand, Pune, Patna, Jammu** etc.

The fest witnessed enormous participation in all its technical and cultural events with vigorous competition and high spiritedness. With various gems of success embedded in its crown, Saturnalia'17 ended after witnessing a footfall of 15,000+ during the 3day extravaganza, with the inception of thousands of smiles and memories that won't be fading in the near future.

URJA 2018

URJA 2018 is one of the biggest sports fest of North India, hosted by Thapar Institute of Engineering and Technology. Being one of the prestigious college of the region, TIET planned and successfully organised this years' inter college sports fest from 16-18 February 2018.

URJA comprises of many pre-fest events that are followed by the three main fest days which comprises of major sports competitions i.e. Basketball, Cricket, Football, Badminton, Chess, Volleyball, Lawn Tennis, Table Tennis etc. PRE-FEST EVENTS URJA'18 kicked off on 16th January 2018 with a Triathlon- followed by Orientation of Urja in the COS complex that carried the motives to make the people aware about the extravaganza. Gully cricket, Thapar Fitness League, Kite Flying, Futsal, Mess workers Cricket, NBA Jam and Faculty Cricket were the major highlights from the pre events. We had a large no of participation in all of our pre-events associating workers, students and faculty members.

700+ participants came from 19 different colleges from all over north India namely NIT JALANDHAR, NIT KURUKSHETRA, NSIT, NIT HAMIRPUR, CHITKARA UNIVERSITY, PEC, UIET CHANDIGARH, LPU, NIET, G.L. BAJAJ, VIPS, UIET CHANDIGARH, SLIET LONGOWAL, IPU DELHI, BANDA SINGH BAHADUR UNIVERSITY, RAYAT BHARA UNVIERSITY.. TIET's team were victorious as they came out as the Overall Winners of the sports competition by the virtue of winning Basketball, Cricket, Football, Lawn Tennis, Table tennis and Chess tournaments. URJA'18 was kick started with its opening ceremony which was held on 16th February. Dr. Maneek Kumar (Dean of Students Affairs, TIET) and the Head of Indian Oil, Patiala were invited as the Chief Guest for the same. The evening included

March past by different teams, Bhangra performance and main attraction i.e. the lantern show. All the sports events were conducted efficiently according to the fixtures. Moreover, each team had the top players on and it was great to witness great sportsmanship from the players and support from the non-participating students.

The competition was quite interesting and the hunger to win in each team was amazing. But at the same time the sportsmanship shown by everybody was quite tremendous to watch. But one could easily feel the sense of competition that everyone had from the sledging we saw between the matches. Also there was proper coverage of the entire fest with photographers covering everything. Interviews of all the winners were taken and as the finals were nearing, the excitement was bound to grow considering the shot at being the Overall Champion.

Thapar Dance Club- 'NOX'

As part of the western dance society of Thapar Institute of Engineering and Technology, NOXians organized a training workshop by renowned choreographer Mr. Ankit Sati in August 2017. This workshop serves as the training platform for the team to gear up for the various inter university competitions in the year ahead.

The team participated in various competitions though out the year and won prizes at the inter university events. To start with the team participated in the Inter University dance competition as a

part of the cultural festival of Chitkara University, Baddhi Campus. The team secured second position with a cash prize of Rs. 25000/-. Next the team participated in biggest cultural festival of north India held at IIT Delhi Rendezvous. Following up the team participated in PECFEST the cultural festival of Punjab Engineering College, Chandigarh. Here the team reached the final round of group dance competition securing a position in top four teams. Finally the team participated in the cultural festival of TIET, Saturnalia and secured first position.

As is the customary the team gave a ceremonial close to the yearly events by demonstrating their dancing skills to the TIET family by organizing the in house annual event NOX nite. The event was a great success and was thoroughly enjoyed by both faculty and students of TIET.

AIChE Student Chapter

AIChE provides the opportunity to connect with a global network of intelligent, resourceful colleagues and their shared wisdom. Through this student chapter chemical engineering students find an opportunity to widen their horizons by getting an exposure to the latest technology and an insight to the industrial applications involved with the same.

Thapar Institute of Engineering and Technology officially achieved Student Chapter status in The American Institute of Chemical Engineers in May 2015.

Fine Arts & Photography Society

Kaleidoscope is a much-awaited event of our institution organized by the society that has never failed to outgrow its own levels, making art as language. We provide a platform for young budding artists and photographers to learn, grow, expand, exhibit and live the world of imagination to its potential. This exhibition celebrates the sense of belief, refreshing optimism and prospect of renewal that young artists offer to the modern culture.

Kaleidoscope aimed for covering the world wide concept with the theme “Around The World”. For the same, each member of the society worked really hard and in the duration of a mere month, the members were able to replicate the famous architectures from all over the world. We were successfully able to project almost every country via 2-D drawings and 3-D models. The wizards left no stone unturned in exploring their craft. Several members were even offered monetary benefits from various visitors to purchase their artworks.

Scott Kelby’s Photo-walk is one of the most famous worldwide photo-walk that aims in uniting photographers to capture beautiful outlooks that we may never get to see. In year 2017 on 7th October our society became the first one to organize an international level photo-walk in the Punjab region and after the walk photographs were also uploaded to a worldwide online competition.

A workshop was conducted on basics of Adobe Light room, the pioneering software in the field of photography, which is used worldwide by top professional photographers for post processing of their photographs.

Calligraphy workshop was also followed by Light room around the same time period. The stroke of pen to write alphabets was made using multiple calligraphic tools such as bamboo sticks, ink pens, calligraphic pens, etc.

Charcoal workshops were conducted on February 28, 2018 and March 1, 2018 that covered the basics of charcoal sketching, and the different tools used in sketching. The instructors also enlightened the students about the basic differences between graphite and charcoal sketching along with basics of shading with charcoal.

Chakravyuh - 30th Oct- 3rd nov 2017

The inaugural event of Chakravyuh, Code Golf was an intra - college programming competition hosted and administered by Creative Computing Society (CCS). It was one of the most exciting event of the whole fest. The competition was held on 30th October 2017 as a means to identify top talent in the college. The event was conducted on Hacker Rank, an online platform. The competition consisted of a set of algorithmic problems which must be solved in a fixed amount of time and the competitor with shortest code gets extra points. Competitors may use any programming language and development environment to obtain their solutions. Scores were awarded, according to the execution time of the code and the time complexity of their code. The 2-hour event surely provided students the best chance to showcase their coding skills.

Clone it: The participants were all given a website which they had to replicate using HTML, CSS and JS in the given time. This was a website network-based competition where challengers had to replicate the given website with effects and color. Points were awarded on the basis of how near the copied version was to the original site. The competition took place in respective hostels with online submission. The participant with the closest replica of the network was announce the winner.

Knockout coding : This was a competitive coding-based event where the participants were tested on their spontaneity. In each round the participants were given a question and the one who solved it last would be eliminated.

Bash it: This was another mind challenging competition for the students. Bash it event is a guided CTF. These are information security competitions in which each team of hackers is given multiple tasks to complete, which may include: Vulnerability Finding, Steganography, Brute Forcing, Reverse Engineering, Forensics and Binary Analysis. Each task provides a flag, a string that can be used to get points. Points are given according to the difficulty level of the problem solved.

Reverse coding: For this event, a special web application was developed. Teams had to solve a very easy question and spoil the code by adding extra loops and variables and make them complicated to understand. The other teams had to decode and answer what the program does.

Coding buffet: This was another competitive coding-based event. A question was added each hour on Hackerrank and a leaderboard was maintained. The one on the top of the leaderboard at the end was the winner.

Line follower: The teams had to make a Arduino based model which follows a black line on the floor. The team who's model completed the circuit in the minimum time won.

Mozilla web maker: This was a hackathon where teams were given 12 hours and they had to develop a functional website and a comic strip based on given topics. This was an overnight event and was inspired by Mozilla Web Maker Party - an event that supports free content on the internet.

Code reaction: This was the coding-based competition in which the competitors, in a team of two had to solve problems by writing codes and find out which further were to be used as inputs for the next question. Only one question was provided at a time. Participants were judged by the number of questions solved and time taken. Winner declared had the most accurate answers and least time taken to solve the problems. Around 90 students participated in this fun filled competition which tested the logical and coding skills.

Hack'18 Report 19th - 20th Jan 2018

This was a 12 hour hackathon where students were given a topic and they had to build an application based on it. 60+ students participated in the hackathon and the best app/website/extension was chosen as the winner.

BYLD Workshop Report -25th - 27th Oct 2017

This was a 3 day workshop in collaboration with BYLD group. A lot of topics- html (hypertext markup language), css (cascading style sheets), javascript, operating systems, embedded systems, adobe photoshop, arduino, raspberry PI, etc. were covered. The workshops aimed at making students experiment with a lot of different technologies so they can choose what interests them. 100+ students participated in these workshops.

Winter Break Events Report- 2nd-5th Jan 2018

Best website designer:

An intra-CCS event where all the members had to develop a personal website over the winter break as an online resume. This event not only helped the students in getting better and practicing Web Development but also strengthened their CV for future purpose. Finally the member with the best website won. The website was judged on the following basis- User Interface, User Experience, Functionality, Portrayal.In this event, the participants had to solve a few competitive coding questions which were posted online with two difficulty set and points accordingly. From all the years, two winners were declared for each problem set.

CCS(Creative Computing Society) REPORT

IIT Bombay popularly conducts its annual technological fest under the name of **TechFest** and is highly reputed in terms of both competition level and participation. Achal Saharan along with his teammate Puneet Mishra took part in this edition of the fest which spanned from 27th to 31st December.

The event they took part in was Vise-Clutch, the task was to make a remote-controlled bot (wired or wireless) without using prefabricated parts which was supposed to cross an obstacle course and was supposed to lift and carry thermocol boxes with a robotic arm and place them in position to gain points.

They reached the campus on 27th December, the accommodation was provided by the college against payment from 27th December to 1st January. The wildcard round of the event was scheduled on 30th December. Participating in the event was a really good experience both in terms of the knowledge gained in the microcontroller field and also the exposure gained at the fest, seeing the competition and interacting with students from other colleges.

Literary Society

Literary Society is dedicated to providing a platform for literary expression and creativity to the students of Thapar University. With its eight sub-societies which include ones focused on writing, dramatics, quizzing, to name a few, the student audience the society caters to is vast and varied. Whereas the society gives an opportunity to showcase one's talent at various competitive events – the crowning glory of which is the inter-year literary festival, Elixir – it also disseminates literary knowledge and culture through various club meetings organized throughout the year, allowing members to grow and learn side by side.

The Literary Society, TIET organised the Literary Week from 30th January, 2018 to 8th February, 2018 in preparation of the upcoming Inter-University Literary Fest Eclectiza 2018. The Litweek comprised of events held in continuous stretches over several days from all the eight sub societies. The Thapar Quizzing Club organised five quizzes with themes ranging from business, sports, entertainment, literature and general.

The Hindi Society, *Anubhooti*, organised two events during the Literary Week the sub society organised meets comprised of debating, writing, and reading out famous passages famous in their respective languages.

The Punjabi Literary Society, *Udaari*, organised 4 events which were aimed at promoting the cultures and linguistics prevalent in Punjab and in general, India. Comprising of a poetry competition, a debating competition and much more, the events pulled the most crowd on account of Punjabi being the mother tongue of most people on campus

The Thapar Theatre Club held its auditions for the showcase play and the Theatre Night play after an acting workshop. This was followed by acting competitions both online and offline.

The Cinema Sub-Society, *Cineastes*, wrapped up the literary week with a showing of the Academy Award winning motion picture *La La Land* in the main auditorium which attracted a crowd of over 100 people. Snacks too were provided during the movie.

Econ Club

Virtuoso was a flagship event and was an international event with teams from Nepal, Thailand and Indonesia in attendance. The competition also featured teams from prestigious colleges all over India with St. Xavier's College (Kolkata), Christ University (Bengaluru), IIT (Delhi), IIT (BHU), NSIT, etc. having sent their respective contingents. Our team made it to the finals proving their mettle against the 93 teams who competed against them.

Visionary was a flagship event which demanded acute and in-depth knowledge and understanding of economics as well as smart city designing. It required the logical application of one's aptitude and the presence of mind. Both of our teams finished in the top 3 teams out of the 52 teams that participated and one of our team (Tanish Aggarwal & Devanshu Rastogi) bagging the pole position. The fact that almost all of these colleges were economics, commerce and finance concentric with most of the participants pursuing their degrees in Economics Hons. makes this victory all that more significant with ours being a technical college.

Entrepreneurship Development Cell

Blockchain firm XinFin and Thapar Inst. of Engineering and Technology brings The Startup Expo 3.0

The Startup Expo 3.0 which is organized by the Entrepreneurship Development Cell, T.I.E.T at Patiala, also provides seed funding as well as incubation space to them in addition to any funding received from angel investors. Mr. Amit Kumar, V.P. of Quikr AND Karan Bharadwaj, CTO of Singapore-based blockchain firm XinFin, while interacting with students and faculty, emphasised on technical innovations. He advised startups to do more research on their domain knowledge and better team work. His speech was so inspirational that he got a standing ovation from the audience. While concluding he appreciated the efforts made by ED Cell TIET, to nurture the potential of budding engineers.

The 'Pitchers' was organised on 4th February aimed at first and second year students who currently do not have a running startup but want to gain knowledge about the startup world. Teams of 8 were allocated an established startup in which they had to enact the roles of major heads like CEO, COO, CMO etc. 20 such teams competed to win overall pitchers trophy along with best individual department head.

Entrepreneurship Development Cell and Venture Lab, Thapar organised the Venture Lab Weekend on 10th to 12th November, 2017.

An Initiative taken by Thapar Institute of Engg. & Technology and Entrepreneurship Development Cell, VL Weekend is closely monitored by Venture lab. With a mission to create generation of change maker and innovators. Venture lab provides initial investment and guidance to budding start-ups and entrepreneurs. It provided ample opportunity to promising ventures with an opportunity for the newbies to learn basics of entrepreneurship and ventures.

MICROSOFT STUDENT CHAPTER

Under the supervision of **Mr. Prashant Singh Rana** (President, Microsoft Student Chapter) and **Mr. Kunal Kishore**(General secretary, Microsoft Student Chapter) a series of events were conducted by Microsoft Student Chapter, TU under the fest name "**RUMBLE 2k18**" Span for the event was from 26th March, 2018 to 1ST April, 2018.

With a great focus towards its core purpose of maintaining technical harmony within students, RUMBLE events are organized to give you cutting edge information, update you with current technology or invention by organizing workshops.

A series of events were conducted by Microsoft Student Chapter:

Blind Coding- It was one of a kind coding competition where you are blind to what you type. 50 minutes were given to code on the blackened screen the solution of the given problems. After that 5 minutes were given to review code with screen mode on. Participant with most number of correct code and leat error was declared winner.

Game of Codes
It was an Competitive Coding Competition comprising of 2 Rounds , First was the online Hackerrank competition Out of which students were called for the offline round which was hosted on Hackerrank but taken in the CITM Labs. The questions were separate for each year. Conducted on 19th Jan 2018 CITM Lab and online round on 17th Jan 2018 9:00PM

Football Quiz :-

The field's set and the audience all pumped up for the engineers who not only code but also keep that dull boy Jack away by being active on the sports front as well.

Football quiz test the knowledge of participant in the arena of soccer. Students participated in teams of two. There were four rounds including written, audio-visual, history and rapid fire with expulsion of teams in each round. Top two teams were given prizes.

Switch Coding:-

Students participated in a team of two. The partners were switched every 5 minute to work on the solution formed by the other team member for the given problem without any communication.

Women Who Code:-

Wrong are people who consider women lacking in technical field, with best problem solving skills and logical analysis, they have got the best coding mind-set. Women-who-code, an online Hackerrank competition only for girls. It was conducted in two stages. First an online qualification round held on 22nd Jan and then an onsite final round held on 24th Jan in CITM lab.

Over 30 girls participated in the online round and 11 were invited to participate in the onsite round. Top 3 Girls were given Prizes.

Neural Network Workshop
The workshop was about introducing the students to the basics of machine learning and giving them a introduction about the working of a neural network. It was organised on 24-Jan-2018. After the Lecture a short quiz was taken on the topic which was taught out of which two winners were chosen.

Pratigya Society

SPORTS DAY
For a student, sports are as much important as academics. Playing sports teaches life lessons like discipline, responsibility, self-confidence, accountability, and teamwork as well as keep us physically fit. Keeping all this in mind, Pratigya Society organised SPORTS DAY for its students on October 29th, 2017.
It was a huge success as students participated with much interest and also enjoyed a lot. They were also provided with refreshments.

KITE FLYING DAY

For a student, outdoor creative activities are as much important as academics. And one of these activities is traditional Indian practice of flying kites. Keeping all this in mind, Pratigya Society organised KITE FLYING DAY for its students on January 21th, 2018.

It was a huge success as students participated with much interest and also enjoyed a lot. All the required material like kites, *dor*, etc. was provided by 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 on **January 28, 2018**. For all-round development of the child, it is necessary that he/she must regularly engage in co-curricular activities like art and craft.

Students from grade nursery to +2 participated in this daylong event, which started at 10:30 am and went till 4:00 pm, with a lot of enthusiasm as they put together their artistic, imaginative and creative skills to make bright and beautiful rangoli and drawing.

It started with Gayatri Mantra and National Anthem to inculcate the feeling of patriotism and importance of republic day was told to them. It is important for the welfare of the country that its present generation should realize that the future is in its hands.

Every student was provided with sheet, wax/crayon colors, pencil and all the required things. After this, students were taken to auditorium for rangoli competition. 10 teams were made with 5-6 students in each team. It was a tough decision to decide the winners as all the students did well. 4 winners were decided in drawing competition and top 3 teams were chosen in rangoli competition.

The day witnessed an active participation from all the children and great enthusiasm by the organizing volunteers. A proper arrangement was made for refreshments. All the selected winners were rewarded suitably and others were also encouraged to match them or even do better than them in future.

PRATIGYA'MOVIE SHOWCASE

Pratigya Society organized a movie show for its students in Auditorium on 11th February, 2018 at 10:30 a.m. Initially it was difficult to select a single movie which must not only entertain but also give some message to children.

After a long day planning we came up with idea of showing 2011 animated movie *'KUNG FU PANDA 2'*. Since it was a blockbuster movie and children generally like animated movies, most of the children agreed readily. Another idea that came to our mind while selecting movie was to erase the general notion that animals don't have their own life or they can't think much.

MOVIE SYPNOPSIS:

Po (title character and a panda in his 20s) and the Furious Five battle an evil peacock named Lord Shen who has a powerful weapon that he plans to conquer China with. However, Po discovers a terrifying secret about his past in the process. And he also discovers that Shen has something to do with it.

There was also an entertainment quiz with questions related to movie and students giving correct answers were also rewarded. This also increased students' interest in movie.

MUDRA NITE 2017

The MUDRA NITE 2017 was conducted with great pomp and show on 10th October 2017, Tuesday at the Open Air Theatre in the COS complex, Thapar University. Following events took place on the Nite

Music

- Solo performances: There were 4 solo performances, 2 male and 2 female. Each performance lasted about 7-8 minutes,
- Gigs: there were 2 rock band gigs, under the name Junction by the bands EPOA and Black and White. Both the bands had 4 members, one each on bass guitar, lead guitar, drums and vocals. Each gig was about 10-12 minutes duration.
- Fusion: A rock band fusion performance. There were two vocalists, a drummer, a lead guitarist and a bass guitarist, along with a synth player. It was a 5-minute performance.

Folk dance

Bhangra: A colourful and vibrant Bhangra performance by 12 students, 6 boys and 6 girls. Duration was 12 minutes.

Fashion show

There were three rounds of thematic fashion show, based on different themes, each round having a standard duration of 7.5 minutes. Total number of students involved in fashion show were 25

Skit

A 12-15 minute comedy skit was presented by a bunch of about 7 boys and 3 girls. Special care was taken that the dialogues do not cross the lines of obscenity and vulgarity.

An audience of around 3000-3500 students was present, enjoying the night.

THE IZHAAR 2018

The IZHAAR 2018 was conducted by MUDRA SOCIETY with great pomp and show from 22nd February to 25th February 2018, in COS OAT, Thapar Institute of Engineering Technology. It is an intra-college cultural fest in which 1st, 2nd, 3rd and P.G. Year participate with full zeal and vigour. Year representatives of each year are responsible for gathering participants for various events and publicize IZHAAR and there were six year representatives from each year.

SPADES, 2017

Everyone considers sports to be vital part of any human's life but not everybody incorporate the same in their lives. With the new year of college and the new batch getting used to the surroundings, it was

necessary to make the fresher's familiar with the amazing sport facilities in TIET. Considering the general mind-set of anyone entering the college for the first time, that is doing everything that they left for studies during their school days.

Keeping the same in mind, this year was no different and SPADES, 17 was successfully organized. SPADES is an inter year sports fest organized in TIET for the students of Thapar. For every student of Thapar, SPADES is the first thing that gives them the opportunity to be fully dedicated towards sports and have a healthy competition. Therefore everyone have a special connect with SPADES and it is quite evident from the kind of participation and enthusiasm the participants show during the course of the whole event.

SPIC MACAY

WORKSHOPS - KRITIKSHALA

SPICMACAY TIET organised 3 day workshops of classical dance (kathak) and classical singing from 26-28th September '17.

The workshops were organised with the motive of promotion and interest building in Indian classical music of the youth, taking forward the SPICMACAY motto. A nationally recognised Kathak dancer and faculty from the INDIAN IDOL academy were invited as instructors for the workshop. The workshops were successfully organised with the support of the college administration, team members and our respected instructors.

With TIET having International ties, it is integral for its students to radiate the Indian culture, wherever they go. Therefore it is critical to acknowledge such workshops in the university and promote Indian culture here and all over the world through the students of the University.

SWARGINI

Popularly known as The Flute Sisters - Suchismita Debopriya Chatterjee together with SPIC MACAY took an initiative to give interactive performances for students in order for them to learn about India's musical heritage. Thapar Institute of Engineering and Technology was a part of this initiative and held an event for the same on 17th January in Main Auditorium at 6 pm.

The event helped the students of TIET to gain knowledge about the musical heritage of India. It encouraged students, especially girls, to be proud of their rich heritage and to practice flute as a musical instrument so as to revive the culture of India. The artists also organized an interactive session towards the end of the show where they dealt with queries related to the subtle art of flute playing. They believe that playing as a duo, known in Indian classical music as *'jugalbandi'*, is an advantage on the flute, as the instrument cannot be tuned, forcing the artist to adjust to the instrument. They consider their skills to be complementary, as they claim to have different strengths.

QAWWALI NIGHT

"To be a qawwal, one must be willing to release one's mind and soul from one's body to achieve ecstasy through music. Qawwali is enlightenment itself."

And to have this enlightenment, Thapar Institute of Engineering and Technology took an opportunity by having Qawwal Hasnain Nizami along with his group in the Main Auditorium of TIET, on 27th February, at 6:30 P.M.

The event helped the students to gain knowledge about the Sufi devotional music, which is very popular in the South Asia. Many qawwalis were being performed by the group, which filled up the audience with emotional yet sparkling happiness.

The hall was mesmerized with the overwhelming performance of the group. Audience was greatly impressed by the talent of the artists.

VIRSA 2K17 The Essence of Punjab (24-26th October, 31st October, 2017)

VIRSA comprises of various activities and events which binds up a journey to the culture and heritage of Punjab for all the students of Thapar Institute of Engineering and Technology to showcase the beautiful Punjabi culture and do away with the myths many students have about Punjab and it's cultural. The journey form orientation to the Gurupurab Celebrations was full of thrill and memorable one for the students as well as the team member.

Prefest Events:

Chabeel, Movie Eve and Informals

- Punjabi Musical Night
- Punjabi Cultural Eve
- Punjabi Traditional Fair
- Gurpurab Celebrations

United Nations Young Changemakers Conclave

United Nations Young Changemakers Conclave, the annual extravaganza that brings together young change makers, influencers and eminent speakers to deliberate and discuss on issues that matter

"You are not the leaders of tomorrow; you are the leaders of today" Justin Trudeau, Honourable Prime Minister of Canada

The day started early for 52 odd students of Thapar Institute of Engineering and Technology. They had been chosen to be a part of delegation from Thapar to attend United Nations Young Changemakers Conclave, the annual extravaganza that brings together young change makers, influencers and eminent speakers to deliberate and discuss on issues that matter. With speaker line-up that boasted of Amitabh Kant from Niti Aayog to Dia Mirza, these students had a lot to explore on 24th Feb.2018. Laxmi Tripathi (Transgender Rights Activist). The topics varied from education and women empowerment to government policies and transgender equality, keeping the audience on the edge of their seats.

The conference ended with the famous poet Rupi Kaur mesmerizing the audience with her soulful poetry on her mother. It had a lot for young students to gain in different fields. The issues, the ideas, the interaction, all of them gave students a deep insight and things to ponder on.

TIET MOVIE CLUB (APRIL 17 TO March 18)

Thapar Movie Club (TMC) was renamed as TIET Movie Club (TIMC) to broaden its scope with an objective to get it registered under societies act at a later stage and attract funds from various government bodies and NGOs.

The activities of the club were at all-time low due to changes in its organisation set up. These changes were necessary after reviewing the productive output of the previous years. April 2017 onwards, each student by virtue of his/ her admission in TIET is member of TIMC while executive team will consist of four members who will help in organising the events and showcasing the activities of the club.

Activities

Movie Making: A group of students from EIC and COE approached TIMC with an idea to direct the movie and were supported with all the logistics and administrative help by the club. The team led by Raghav Dhawan (EIC) and Prabhjit Singh (COE), both 2nd Year students, worked on two projects one after the other. The 1st project being their maiden project got stuck at the editing stage due to certain short comings.

However, the team was enthusiastic enough to start work on another project immediately, where they overcame the shortcomings of the previous one, to make a one hour thriller entitled "The Mystery." At present, the movie is under editing and is expected to be released in last week of March 2018, after MSTs. The team, at present is working on making a buzz around student community of TIET, by promoting its advertisement on various social media platforms like Twitter, FaceBook, and YouTube etc. Following are the links and pics.

1. Twitter : https://twitter.com/TIETofficial/status/972077988459237376
2. YouTube : https://youtu.be/TwtCoAnDz1Y

Future Direction: TIMC has made a new beginning as per needs of time and needs to work on attracting and motivating more students towards movie making with social issues in the coming years.

TEDxTIET

Date of Event : 29th October, 2017

THEME : A dream with an empty pocket.

The team of applied for TEDxTIET by filling a form which was available on the TED website. The Curator Mr. Shivam Gera officially signed the letter of TEDxTIET on 21st August 2017. It further proceeded with Mr. Shubham Dudeja becoming the Co-Curator and the recruitments of the team taking place on 29th August 2017.

The team was divided majorly into Business Development and Speaker Relations and Research. The marketing team headed by Mr. Vaibhav Agarwal worked upon bringing sponsors for the event. The Speaker Relations Department was headed by Mr. Arjun Raina, the team brainstormed about the Speakers that has to be contacted and the topics that they should speak upon. The speakers were contacted through various Social Media platforms or by directly arranging a contact of the Speaker.

Finally, a list of 9 Speakers was ready along with their topics of the Talk trying to cover almost every aspect of the current issues.

TEDxTIET was driven by OLA, Technical Partner SimbaQuardz, Associate Partner ELITE Spa&Fitness, Merchandise Partner Tees Hood, Videography Partner Studio Narinder Patiala, The Souled Store Gifting Partner and Catering Partner Hangout. The following Speakers were invited:

Miss. Nidhi Kulpati, Senior Editor and News Anchor NDTV

V Minor, Young Band which rose to fame through their astounding Indo-Western fusion music on YouTube.

Mr. Ravinder Singh, an Indian author. He has written five novels entitled "I Too Had a Love Story", "Can Love Happen Twice?", "Like it happened Yesterday", "Your Dreams are Mine Now" and "This Love That Feels Right".

1. Shri Gauranga Das Ji, serving in the Temple Presidential Board, ISKCON Chowpatty and the winner of United Nations Award for Excellence and Innovation in Sustainable Tourism.
2. Mrs. Karolina Goswami, the editor-in-chief of "India in details", a Polish national who came to this country and was charmed by its awe-inspiring culture.
3. RJ Sayema Rehman, a passionate Radio Jockey at Radio Mirchi on the shows "Meethi Mirchi" and "Purani Jeans" that topped the charts for 14 years.
4. Mr. Sajal Jain, Promoter and advisor of Mobile Computing Company and an internationally acclaimed business strategist, winner of Young Manager 2009 and 2010 Award.
5. Dr. Mukul Verma, Director Acid Survivors Foundation India, Delhi Chapter.
6. Ankita Shah, a well-renowned poet and curator at The Poetry Club, Mumbai.

The SPOCs of the respective speakers were constantly in touch to make sure that the Speakers were clear about the guidelines of TEDx. Prior to the event the respective SPOCs went a day before or two to receive their Speakers. The stay of the Speakers was arranged in Eqbal Inn along with their meals.

And finally, months of assiduous preparations finally culminated into a grand show on the 29th of October 2017. The day started early, with the assembling of all the volunteers at 8:00 am in the premises. The arrangements, including decorations and tenting which were started with a full swing, with the speakers and the attendees arriving at 9:00am. The attendees were registered on the desk and were handed their event kits.

The stage was occupied by the hosts at Opening Ceremony at 9:00am and Miss Apoorva Khanna who was the anchor of the event then elaborated the rules of the event and thank the sponsor.

A sample TED Talk was played at 9:30am. The first speaker of the session Ankita Shah spoke upon "Where are you running to?" at 10:00 am. The next three talks were given by Sh. Gauranga Das Ji (serving in the Temple Presidential Board ISKCON Chowpatty), Sayema Rehman (RJ at Radio Mirchi) and Mrs. Karolina Goswami (the editor in Chief of "India in details") about "**The Art of Tolerance**"," **Its okay not knowing what you would become**" and "**Be the owner of your mind**" respectively. Subsequent talks were separated by an official TED video.

YOUTH UNITED PATIALA CHAPTER

"*Be the change you want to see"*

Youth United Patiala Chapter always encourages development of the society as a whole through its various events, periodicals and community services. We aim to deliver our best to bring the look of

happiness on the faces of people we want to help. Our annual year of 2017-18 was marked up by one of our flagship events i.e. Daan Utsav or the Joy of Giving Week.

DAAN UTSAV (OCTOBER 2 TO OCTOBER 8, 2017)

Youth United celebrated Daan Utsav from October 2 - October 8. Daan Utsav. Earlier called Joy of Giving Week, is India's very own festival of giving. It aims to spread love, joy and happiness among those who are less fortunate than us, and for each one of us to experience the joy in giving. It is like our own Eid or Diwali, with a key feature that it celebrates "giving". People celebrate this festival in various ways. People donate money, their time, materials, and sometimes just pure love. Youth United celebrated Daan Utsav with following sub events organized over the span of one week:

Wish Tree
In this event underprivileged children were gathered, their wishes were noted down and were served with refreshments. On the final day of the event they were again brought together in the college auditorium and their wishes were fulfilled. There were some volunteers who performed splendidly on the stage.

Sewa Sandwich
In this event food packet containing healthy sandwiches and lassi were prepared by our team members and then served to rickshaw pullers, security guards and other helpers with the objective of bringing smile on their faces.

Free Health Camp
In this event free health checkup for Mess. Workers, Rickshaw Pullers, Labourers and students was arranged by Youth United. Everything needed for health checkup was provided to doctors and to the patients also. All the medicines prescribed by the doctors were provided for free to the patients.

Vastra Daan
Following the great Mother Teresa's quote, "Not all of us can do great things. But we can do small things with great love". In this final chapter we provided free and new clothing to the underprivileged people living in Patiala. Daan Utsav was a successful event and everybody in the team was contended with the way it had turned out and looking at all the smiles on people's faces when they were presented with the token of love was very overwhelming.

Samvaad: Personal Counselling Session
7th and 8th November, 2017

University life is always tough for the students and comes with a lot of mental stress, heartbreaks, the anxiety of making a strong career, feeling lonely in a room full of people etc. **Samvaad** was a personal counseling session, where Acharyamitra Paroksh Sujay was called to steer the students of the college in the right direction and go through the difficult situations. He personally assisted the doubt sessions one on one.

School Visits

"There is no greater disability in society than the inability to see a person as more."

These words never seemed true before we met children from the **Vani School** and the **Patiala School for Deaf and Blind** on 20th January, 2018 while **B.E. Asha School** and **Navjeevni School** were

visited by our team members on 31st January, 2018. These children had immense sense of determination and their talents were mind-blowing. Our team members spent quality time at these schools and took lots of memories with them.

Smiling Future (19th February, 2018)

"Spread Love"

Art can be found beyond sight and music can be felt in our perception of the world around us. These children had shown us what living life actually was, and on 19th February, our flagship event "**Smiling future"** was organized and various cultural performances like singing, dancing and play were performed by the various students from the schools like: **Vani school, Patiala school for deaf and blind**, **Navjeevni School** and **B.E. Asha school**. All the children put up massive display of talent and energy. Everyone was given refreshments and children were also awarded for their courage and hard work.

In the morning children from the above mentioned schools had visited for a drawing competition and were given prizes as a token of appreciation. Their paintings and handicrafts were also put on display and for sale so other people could also watch their awesomeness and a contribution can be made for the good cause.

Self Defense Classes (5th February, 2018- present)

Looking at the present disturbing events of the world, self defence classes were started in the college by us. Trained Instructor has been called from the Taekwondo district association and students are being given the lessons free of cost. Refreshments are also provided after the daily sessions. The classes so far have had an amazing response and everyday is a new challenge for all those in attendance.

Report of TMS 2017-18

Thapar Mathematical Society (TMS) has organized two events "Infinity 2k17" and "Workshop on Applications of Optimization Techniques". The detailed report for both the events is appended below.

Infinity 2k17 was observed as a 2-day inter-collegiate mathematics fest organized by Thapar Mathematical Society in association with Scimatics – an independent student group of TIET on April 29-30, 2017. The fest started with inauguration by Dr. A.K. Lal, HOD school of Mathematics, on 29th April 2017 (Saturday). Dr. Lal declared the fest open and highlighted the role and importance of these kinds of events for the students. He showed light on the various achievements of students in the field of mathematics.

The main events included 'Just ∫du It' (a quiz contest), Giant Tic-Tac-Toe (taking the game of noughts and cross to a different level), Bollywood Auction (a chance to buy your own actors), Karyaneeti (The Logistics Manager-The Beer Game Challenge), Do Not Cross (a mind boggling Crime Scene Investigation) along with Guest Lectures by renowned faculties on relation of Mathematics with other disciples, future aspects and career opportunities in Mathematics and an interactive session.

"Applications of Optimization Techniques" on March 30-31, 2018.

Thapar Mathematical Society (TMS) organized a workshop **"Applications of Optimization Techniques" on March 30-31, 2018**. The workshop was inaugurated by Dr. Meenakshi Rana on

March 30, 2018 at 5:30 pm with many other faculty members of SOM and CSED. The aim of the workshop was to make aware students about the research in optimization techniques as Optimization is a compulsory course for all UG students and hence all the students are aware about the basic knowledge of it. Around 150 participants out of 179 registered attended this workshop. This workshop was proven a fruitful for the participants including BE students, research scholar, and participants from Punjabi University (Patiala), Khalsa College (Patiala), Panjab University (Chandigarh), Asian Institute of Technology (Sirhind Road), DCRUST (Murthal) and Baddi University (Baddi).

Theme: 'Daastan-E-Hindustan'

Thapar Food Festival strived to bring together the best of flavours and the widest of varieties, all under one roof. This year witnessed the second edition of the first food festival organised by an Indian University which amalgamated 50+ vendors and attracted an overall footfall of 2000+ people including students, alumni, faculty, and administration.

Theme: 'Daastan-E-Hindustan'

We introduced people to the exotic flavours that not only had essence of our deep-rooted Indian civilization but also the garnishing from the western palate. And added another dimension to the food being served; time. Recreating the journey of Indian taste and depicting the transition of the food being consumed by the masses of the Indian population.

Thapar Food Festival included a series of events that accounted of making the team, advertising and organising the events and serving the best of food from around the country in the most presentable way possible. The journey included:

1. **Cooking Workshop**

   A workshop conducted by Australian culinary chef Tezzy from The Bake Lab left an audience of over 200 in awe as they tasted the samples of Choco Lava Cake and Russian Coleslaw Salad made and taught there.

   On the same day was organised a hogging competition to choose the biggest gourmand amongst all the foodies as a part of selection criteria for Man v/s Food.

2. **Cooking Competition**

   The opportunity for around 60 students to test their culinary skills with the given amount of ingredients turned out as a fierce competition and contestants presented state of the art dishes. The competition was judged by the faculty members.

3. **Man v/s Food**

   The D-Day for all the gluttons was witnessed at Boston Bites where 55 warriors took the challenge of not losing to their appetite and eating 3 large cheese burst pizzas to avail free food for a year.

4. **Food talk**

The Ted-X speaker, entrepreneur and a former MasterChef judge Mr. Nita Mehta gave tips and tricks to an audience of over 200 to make healthy and nutritious diet seem easy and how it can be accessed by hostelers.

5. **Fete Day**

The day of the final showcase where 100+ dishes were served to 1200+ people with vendors like Keventers and Taco Bells outshining at SBOP Lawns. The entry began at 5:30 with a proper security check. The foodies were entertained by fire shows, dance performances and live coverage by Josh Campus Da. The artworks depicting the journey of Indian food; showcasing 'Daastan-E-Hindustan' were displayed. The barricading and bouncers present ensured discipline in the fete area.

6. **Stalls outside G-block**

Three days past the main day, the stalls by Keventers and Hangouts were set up outside G-Block and provided food at highly discounted prices, attracting a lot of crowd which did or could not attend the main event.

Online Competitions:

7. **Tasveer-e-Zaika**

An online competition to give over 100 students a platform to exhibit their love for photography as well as favourite foods. With gift hampers worth Rs.10,000.

8. **Logo Kaun**

Another online competition to guess the logos of our associates to sort from over 100 students for the event Dine Out.

Thapar Amateur Astronomers Society (TAAS) for 2017-18

Observatory Visit (Punjabi University)
(Jupiter and its Moons)

International Astronomy Day (Aakash-Ganga)

(Main Day)

- 29th April, 2017 marked our Annual Fest (Aakash-Ganga) on The International Astronomy Day bringing Students of 20 local Schools participating and competing each other in various events.

- Invited Talk delivered by our guests:
  Prof. Sandeep Sahijpal (Astrophysicist, Panjab University, Chandigarh) and
  Mr. Ravinder Singh (Observatory Head, Punjabi University, Patiala)

Eyes on Space

Thapar Amateur Astronomers Society – TAAS (23rd-25th March, 2018)

These pictures are not just some stuff to show off, but they encapsulate within themselves, the stories of our adventurous journey to Parashar Lake.

For an astronomy and nature lover, this was not less than a dream come true. Being in center of humongous mountains and watching the crystal clear sky, far from smoking cities, and the astonishing view of the galaxy make you realize the worth of your existence.

NSS 2017-18

Swachh Bharat Abhiyan

As a part of the week long activities of NSS, Thapar Institute of Engineering and Technology, came forward to organize a cleanliness drive: Swachh Bharat Abhiyan. Some volunteers of other units also took part. In recent times the student population in campus has been increased; same for teaching and supporting stuff. So it becomes more important than ever to maintain cleanliness throughout the campus. TIET although has a dedicated system to maintain this but more awareness among the residents is helpful. The concept is 'Don't litter, make campus cleaner'. This realization of the volunteers leads them to organize an awareness drive on 21 February, 2018. The volunteers started the awareness drive from the main gate and extended to the areas near cafeteria and eateries. They interacted with the visitor, made them aware about the importance of the drive. They got good response from the student community. Many students and even senior faculty encouraged the drive and took part impromptu. The NSS volunteers are now planning for a more comprehensive awareness drive on cleanliness.

Road safety Awareness

In recent times road safety became an important issue in India. Necessity of awareness is increasing day by day. Besides many visitors a significant number of staff members and students commute to Thapar Institute of Engineering and Technology daily. Also construction work is going in-campus at different places that involves construction-vehicles movement. Therefore this was a timely and appropriate effort to organize a Road Safety Awareness Program in TIET campus. The NSS unit-13 with support from other NSS units of TIET conducted a road safety awareness programme on 22/02/2018 and 23/02/2018. The programme was conducted with the aim of creating awareness among the youngsters about the perils of rash and negligent driving given the fact that most victims of the road accident are the youth.

Guest Lecture on Disaster Management by Mr. Kakaram Verma

A guest lecture was organized on disaster management by Mr. Kakaram Verma. He demonstrated the various steps of first aid treatment required during an accident of a person. Also he demonstrated the

use of fire fighting equipments. Around 25 students have participated in this lecture and got knowledge and also performs hands on experience.

Free Health Check Up Camp:

Free health check-up camp was organized on 8th march 2018 to celebrate the International Women's day in the dispensary of Thapar Institute of Engineering and Technology. State bank of India sponsored the program. Dr. Nidhi Bhutani Sood (MD, Obst. & Gynae) from A P Health and Trauma Centre inaugurated the camp in the presence of All NSS volunteers and Mr. Arun Kumar Branch Manager, SBI. Also Medicine specialist Dr. Sonik and Dr. Jagir Kaur were present in the camp. Around 40 women patient got benefit from this camp.

DENTAL CAMP

The NSS Unit XII of LMTSOM organized *Free Dental Camp*with collaboration of Shri Sukhmani Dental college on Monday, 29th January, 2018 from 10:30 AM – 2:00 PM in the college premises. A team of specialist Dental Surgeons and para-medical staff carried out a comprehensive dental checkup on college students, Faculty and other employees of college.The Programme was inaugurated by **Dr Pradeep Kumar Gupta(chair Academics and Accreditations)** and was the first one to get his teeth checked.
It was attended by Faculty members, NSS committee members and all the staff of the college. **NSS Faculty Coordinator- Prof. Gaurav Goyal** addressed the gathering by highlighting the need & significance of NSS activities, combined participation of student & faculty in Social Service to build a better society where they understand themselves in relation to their community.
A total of 80 people were examined in the dental camp. Event was organized under guidance of Dr. Gaurav Goyal and managed well by Sanuj Garg ,Abhinav Jain ,Taranpreet Singh, Tushar Luthra, Megha Jeatley, Prince ,Rubina Garg and Sahezdeep Singh.
Some photos of event are as follows :-

DAY-2

Blood Donation Camp

Tears of a mother cannot save her Child. But your Blood can.

Blood Donation is service to Humankind by donating blood we help a needy and save a precious life. Thapar School of Management organized Blood Donation Camp under NSS activity on 30th January, 2018 under the mentorship of Mr. Gaurav Goyal. The organizing members approached Indus International Hospital to setup blood donation camp in our college. The requirements asked by them were fulfilled by our team members. The target of 50 donors was set out of which 38 volunteered to donate their blood for this social noble cause. The camp was organized from 10a.m to 3p.m. The volunteers' health was taken into consideration before they donated their blood and the proper arrangements for the refreshments were provided to them after it. The volunteers' were provided with the token of appreciation and the certificate for participating in this noble act.
Following are some glimpses of the event:

DAY-3

Tree Plantation drive

There is a plethora of benefits of planting the trees, from health to environmental impact, to economics and even psychological effects. Planting and then maintaining trees helps lower energy costs, reduce pollution, surroundings improves with green ambience and also increases the value of your property. As green color is a soothing color, it helps you recover from strain quickly. Trees enhance the beauty and making your surroundings beautiful is your duty as well.

Trees are very important part of the planet to provide beauty or shade. There are sundry perspectives of trees in human life such as social, communal, environmental and economic. I am going to describe the major benefits of trees in human life. Trees offer everything which is required by human such as Air, food, house, cloth, energy and beauty.

1. **Trees clean the air:** Trees helps in absorbing odors and pollutant gases such as sulfur dioxide, ozone, nitrogen oxides etc and provide us with fresh air. They offer the most important thing that is fresh air which is the basic need for human to survive. You should not forget that the fresh air reduces the chances of increasing diseases from polluted air.
2. **Trees provide oxygen:** Why is oxygen importance to us? Oxygen is life. I hope, you understand what importance of oxygen is for survival. The only resource of Oxygen is tree. Oxygen for 18 people can be provided in one year by an acre of mature trees.
3. **Trees cool the streets and the city:** Trees cool the streets and the cities by their shade and evaporation from the leaf surface cool the city further by up to 10°F. Hence they are called the natural air conditioners.
4. **Trees Active lifestyles:** Trees helps in improving health as they strongly encourage people to go to parks or in green environment for walking, exercising, jogging or biking which helps them reduce obesity and keeps them fit.
5. **Raise property value:** Homes with more trees or having green ambience in surroundings tend to have higher property value than those without trees, because it decreases pollution and have fresh air around which attracts people more.
6. **Trees shield from ultra-violet rays:** Ultraviolet rays are very harmful for anyone and can cause the most common form of cancer i.e. skin cancer. Trees help in protecting from ultra-violet rays as they reduce UV-B exposure by about 50%.
7. **Trees provide food:** Trees provide food for human beings and also for birds and wildlife. You can plant fruit trees like an apple tree which does not take much space and can be easily planted on the tiniest urban lot. It yields up to 15-20 bushels per year.
8. **Trees heal:** According to studies, people with green ambience out their windows heal faster and with less difficulty or complications. So planting trees around or outside your house can not only help you prevent from visiting doctors more often but also heals you naturally.

DAY-4

DONATION DRIVE

"We make a living by what we get,

But we make a life by what we give"

NSS unit of LMTSM organized a donation drive on 1st Feb 2018. The students and the faculty members donated clothes, books and stationery, shoes and various other things. There was a good

number of donations and all the things were distributed by the NSS volunteers at the following three different sites in village Behra:

- Labor colony
- Slum Area
- Aanganvadi

It was really nice seeing the happy faces of all those people there. The event was a great success with the guidance of NSS coordinator and the contribution of all students and faculty members.

DAY- 5

Animal Rights Skit

"Do unto others as you would have them do unto you."

The NSS unit of LMTSOM organized Animal Skit on Sunday, 2nd February, 2018 in the college premises to put light on the rights of animals and to show care and love towards animals. The team performed the skit in front of the Behra children teaching kids to have compassion and empathy for their furry, feathered, and finned friends is vital for preventing cruelty towards animals as well as in raising them to respect and treat those who are different from them with kindness.

Since animals are living beings like us, we can use our interactions with animals to teach children how to behave towards them. The entire team focused on teaching the kids to respect and protect even the smallest and most despised amongst animals is one of the most important life lessons that was passed along to them. Children were taught about justice, kindness, and mercy towards animals to become more just, kind, and considerate in their relations to them.

DAY-6

Wall Painting

"Colors are the best gift of the nature to us and that how we utilized it"

The NSS unit of LMTSOM organized WALL PAINTING on February 3-2018, Friday at Aanganwaadi, Fatehpur. The topic of painting was kept as clean India. The team painted the wall of school about how to use dustbins and reduce waste on roads and other areas. Creating awareness about cleanliness in villages of INDIA is a mandatory thing only then the mission of CLEAN INDIA will reach till its success point.

DAY-7

Guest Lecture

The NSS unit of LMTSM organized the GUEST LECTURE on February 4-2018, Saturday by our honourable guest Dr. Anita Sharma. She is a great lady and a Bonafide professor at THAPAR UNIVERSITY. She is also a volunteer of "APNI DUNIYA APNA AASIYANA". She did her Doctorate from IIM INDORE. She was also the Assistant Professor of Banasthali University and also she was the corporate trainer at Adecco People One.

GLOBAL VILLAGE 2k14 Organised By AIESEC in Thapar Insitute

AIESEC:

AIESEC is an international, non-political, independent, not-for profit organization run by students and recent graduates of institutions of higher education. AIESEC has, each year since 1948, worked to fulfill the mission of developing young people to meet the challenges of the world, our countries and local communities. By empowering them with the necessary skills and understanding of the forces shaping the world around them, we create a powerful group of future leaders with a strong sense of social responsibility and a desire to act. Our vision for the organization when we started off was "Peace and Fulfilment of Humankind's Potential" and it still remains the same. .

23rd August, 2014 at Playways School:

Global Village was conducted by AIESEC in Playways Senior Secondary School, Patiala. The students and a total of 35 inters from various countries together put up country specific exquisites and souvenirs on display for all the spectators. The school children could instantly relate to the countries culture as taught to them in the curriculum. The event was graced by the benign presence of various Ministers of Punjab and other Corporates. With a footfall of more than 2000 people, the event was a huge success. The day-long fun activities, a grandiose exhibition of diversity, music and dance added colours to the entire event.

26th August, 2014 at Thapar University:

Global Village was conducted by AIESEC in Thapar University for the third consecutive time in the University Campus itself. Around 1500 people attended the event in University where 10 interns from 7 countries showcased cultures of their respective counties. From food to art, tradition to currency, music to dance, the lifestyle was discussed by the interns with the spectators. Also the people shared similar traditions in India as well as Punjab with the interns. The event was also marked with a thrilling drum performance by one of the interns and yet another mesmerized the audience with a melodious song in her language. Fun and frolic continued to seep in with AIESEC jives and informal activities. The cultural experience sharing not only helped the attendees have a deeper understanding of the diversity around but also inspired many to work for the betterment of the whole world.

THAPAR ADVENTURE CLUB 17-18

The report consists of the details of activities and events conducted by Thapar Adventure Club during 2017-18 Session.

It contains brief details of what we had planned and executed on the respective dates.

BIR BILLING ADVENTURE (4th to 8th October)

A fly through endless skies, a current flowing through your rusted body it could turn you into a traveller, an adventurer, take you to endless heights.

Adventure club took to The Paragliding Capital of India, Bir Billing with 80 people to smash the record for most number of paragliding flights achieved by a group in a day. Two buses, sleepless night, plenty of obstacles later we made it to the first campsite, Barot. Adventure club speaks of adventure from Day.

EVENT 2

GUEST LECTURE BY MAN KAUR-A 100 YEAR OLD RUNNER FROM INDIA

Man Kaur is an inspirational story in herself. She is over 100 years old and is known as Auckland's oldest Skywalker. She has won four gold medals at world master games.

She inspired everyone present with her inspirational stories and achievements at such an old age. It was a great learning experience for everyone as she talked about her training and diet. Everyone had interaction with her and she gave her blessings to everyone.

EVENT 3

RISHIKESH EXPEDITION (30th March-1st April)

A successful trip to Rishikesh, a beautiful place to explore was held in which more than a 100 students of TIET joined along. This trip was informative and recreational at the same time as the students could explore the heritage of India and along with that they could experience the thrill through various adventure activities.

The starting day consisted of travel where team members had arranged everything prior to the arrival of transport. As the crowd had gathered, a thorough attendance and head count was performed. After having everything into place the buses left to the destination. We had to face a lot of trouble on the way due to unavoidable traffic congestion near Saharanpur, but team members worked the way out by arranging the necessary external help from police and respective guardians who lived nearby.

We reached our destination i.e. camps at 4 PM which was 8 hours late than our planned time due to the traffic congestion. As we reached everyone was carefully allotted the camps by entertaining every requirement. After settling everything precisely, an Open Mic event was organized by the team for the first time in the history of Adventure Club. Everyone loved it and was mesmerized by the light music. It turned out to be the main event of our trip.

The second day started with thrilling experience of rafting over the river Ganga. It was a heart pumping experience. It was followed by fun beach activities and rock rappelling. This made everyone feel the adventure that Rishikesh had to offer.

SOCIETY OF MECHANICAL AND INDUSTRIALENGINEERS (SOMIE)

Mock Interviews Conducted by SOMIE on 14th November, 2017 (5 PM onwards).

SOMIE conducted technical mock interviews for 4th year students for helping them to gain confidence for campus placement interviews. The panel members for this mock interview were the faculty of MED, TIET, Patiala. The event was conducted on the demand of students of TIET. DPPC of Mechanical Engineering Department suggested SOMIE to conduct mock interviews. Mr. Ayush Pandey is the winner and as decided he will get prize worth Rs. 500/- from SOMIE

Two days national conference on "Large Solar Power Generation- Challenges and Adequate Technological Solutions" at NPTI, Nangal

A national level conference was held on 16th and 17th November, 2017 at National Power Training Institute, Nangal. The SOMIE society organized everything to visit two days national conference. Ten students selected and represented TIET, Patiala at this national conference. This conference provided benefits to our selected students for research projects in solar area. They got an opportunity to interact with professionals from the power section, manufacturers, researchers and academicians. The conference included one day industrial tour to manufacturing unit of Intersolar Dera Bass.

Industrial visit to DMW, Patiala

The SOMIE society organized a one day visit to Diesel Loco Modernisation Works, Patiala for 35 students. This event benefited our students to understand the various parts of the locomotive engine at DMW, Patiala.

2-Day SolidWorks Workshop in our institute on 20 & 21st January

SOMIE and ASHRAE jointly organized a 2-days workshop on CAD software SOLIDWORKS for our students. This Workshop was fruitful to our selected students to explore more about Solidworks software. The workshop was conducted by the Caddcentre, Sector 41-D, Chandigarh. The main aim of the workshop was to get students familiar with the CAD designing in Solidworks. There was also a basic introduction lecture on 3-D printing with experiment on 3D printer

SOMIE Organized a joint workshop on career in civil services by VISION IAS in our institute on 27th March, 2018

SOMIE and Vision IAS organized a workshop on career in civil services on 27st March, 2018. This Workshop was beneficial to get knowledge and achieve their dream to becoming IAS/IPS/IFS.

The events organized this year were a great learning experience for students, expecting to conduct more events next year for the benefit of Students. Such events help in upliftment of the morale of students. The support received from our President Dr. Rohit Kumar Singla was very motivating and helpful and we look forward for his support in the society's future endeavors as well along with the college authorities that shall help the society reach even more heights of glory and success in the coming days.

EVENTS & ACTIVITIES UNDER TAKEN BY THE LEAD SOCIETY

Report Of FIFA Auction

FIFA auction was conducted on 28th march, 2018 for the students of BTB.ech level. Mock Fifa Auction was a strategy based two player team game where each team was given a set amount of virtual money in their account, by which they had to compete with the other teams in an auction to buy a set of players based on the already prescribed conditions and make a complete team.
The event tested the skills and strategy of the teams that took part in the event.
Around 30 teams took part in the event and the LEAD society received a great feedback regarding the event.
Prizes worth 7000 were given to the winners. We aim to conduct a similar event again in the future.

Report On Industrial Trip

An industrial trip to power plant and N.F.L. Bhatinda, was finalized for 26th march 2018. It was to be a one day excursion for the students of 3rd year electrical batch. Aim was to provide students with a hands on experience of the industry and bridge the gap between theoretical and practical learning.
The students would have gained immense knowledge via this trip but unfortunately the trip had to be postponed to the next financial year due to some change of plans which occurred because of an for-seen problem at the thermal power plant Bhatinda.

Report On SOCIETY FAIR

LEAD SOCIETY organized an information cum registration stall at the Society Fair 2k17.
The aim of this stall was to create awareness among the first year students about the LEAD society.
Students were informed about the goals, aims and ideals of the society and their registrations were done to get help in future recruitments.
The students were clearly explained about the last year events as well as future plans and feedback was also taken regarding the same.

IEI THAPAR STUDENT CHAPTER (2017-18)

Society Fair is the best opportunity for any society to interact with the freshers. So, keeping that in mind, our stall was decorated with all our projects comprising of the Oorja Car, War Machine Bot and many more. Quiz was also conducted for the freshers of the emerging technologies. We got more than 150+ registrations at the Society Fair. Carrying on with the enthusiasm, we conducted society recruitments on 6th September. Around 90 students appeared for the interviews and after vigorous interviews, 50 enthusiastic and talented individuals were selected for the Executive Team for the term 2017-18.

Virtual Reality is one of the most emerging technology in the current times. So, keeping in that mind Virtual Reality Workshop was organised on 18th and 19th November in association with RoboKart. Also, a pre-event workshop was organised for the IEI Society member about Adobe Photoshop on 1st and 2nd November. The topics covered in the Virtual Reality workshop were 3d model designing, environment designing, FPS Simulations, Google VR, Unity software. 43 students attended the workshop and Google Cardboard VR kit was given to the participants in a group of four.

OORJA Car Project

This year Team Oorja decided to participate in 5th G.K.D.C. (Go Kart Design Challenge) which is the best go-karting event of the country. Teams from all over India take part in this prestigious competition organized by I.S.N.E.E. (Indian Society of New Era Engineers) in collaboration with FMSCI (The Federation of Motor Sports Club of India). A 3-day workshop was held in the campus which was attended by teams from north India participating in the competition. As being the host, our college Thapar University was marketed by the event as there educational partner for one year. After the workshop the team was ready to step into the initial stages of designing of the go-kart. Initial calculations were done by the team members and a design was made and finalized based on their past experiences and information gained from the workshop. This involved numerous group learning sessions.

This was followed by the purchasing and ordering of required materials and parts (i.e. engine, pipes for chassis, brakes, tires, etc.). Once the required items were acquired the team kick started the

fabrication process. A 10-member team received the go-kart at Coimbatore. During the 4-day event the go-kart cleared all the challenges thrown on it. Be it acceleration, brake test, skid-pad or turning radius test the kart took it all. On the final day the go-kart stood 2nd in the line up with the second-best acceleration. Overall rank of the team was 27/190 teams from all over India.

Acumen 2018

Acumen, Thapar University's annual inter hostel literary festival, was conducted from 23rd April to 27th April 2018. It is a theme based literary extravaganza where participants compete amidst hostel based teams, in events designed and organized by all eight sub-societies of LitSoc. In keeping with the competitive spirit of the fest as well as its literary roots, we decided the theme for this year's fest to be '**British Detectives**.' The four days of the festival saw enthusiastic participation from all three teams in as many as thirty events and it was the combined might of the *Dr. Who* team that edged out the rest to home the trophy.

ECON CLUB

Lady Shri Ram College, one of the most prestigious colleges in India hosted its Commerce fest on January 11 & 12, 2018 in its campus in Delhi. A contingent comprising of seven students namely Kuber,Pulkit Tyagi, Sanchit Goel, Shriyesh Chandra, Shubhank Saxena, Tanish Aggarwal and Devanshu Rastogi represented Thapar University at the fest.The team from Thapar participated in two of their events, specifically "Virtuoso - The Best Manager Event" and "Visioners". Virtuoso was a flagship event and was an international event with teams from Nepal, Thailand and Indonesia in attendance. The competition also featured teams from prestigious colleges all over India with St.Xavier's College (Kolkata), Christ University (Bengaluru), IIT (Delhi), IIT (BHU), NSIT, etc. having sent their respective contingents. Our team made it to the finals proving their mettle against the 93 teams who competed against them.

Visionary was a flagship event which demanded acute and in-depth knowledge and understanding of economics as well as smart city designing. It required the logical application of one's aptitude and the presence of mind. Both of our teams finished in the top 3 teams out of the 52 teams that participated and one of our team (Tanish Aggarwal & Devanshu rastogi) bagging the pole position. The fact that almost all of these colleges were economics, commerce and finance concentric with most of the participants pursuing their degrees in Economics Hons. Makes this victory all that more significant with ours being a technical college.

The students of Econ Club organised the first Economics fest of Thapar Institute of Engineering & Technology, Stratagem in association with Paryavaran Welfare Society on January 19, 20 & 21, 2018. The fest included four flagship events and three interactive events spread across the three-day festival. The fest witnessed participation from some of the most prestigious institutions like BITS, NIT-J, PEC etc. The overall participant response was highly overwhelming as the events were unprecedented and unexplored. The closing ceremony was graced by the presence of our club president, Dr. (Ms.) Ravi Kiran along with Dr V.K. Sanghal.

SPORTS ACTIVITIES

Following are the achievements, participations and activities of sports held during the year 2017-18 on the campus and out station.

* Inter year league tournament of all games was organized in September, 2018
* Inter hostel games (IGNITE) was organized in October, 2018
* Thaparlympics (Inter Departmental tournament) was organized from January to March 2018
* National level sports fest named 'URJA' was organized in February, 2018
* Annual Athletic Meet will be organized in March, 2018.
* Inter Technology University competitions was organized in October, 2018 and April,2018

SR. NO	GAME	TEAM STRENGTH	COMPETITION	DATES	VENUE	RESULT
1	Cricket	16	Invitational	30 sept. to 2 oct 17	IIT Mandi	1st position
2	Tennis men	03	Invitational	30 sept. to 2 oct 17	IIT Mandi	1st position
3	Football	16	Invitational	30 sept. to 2 oct 17	IIT Mandi	Participation
4	Volleyball	12	Invitational	30 sept. to 2 oct 17	IIT Mandi	Participation
5	Badminton	05	Invitational	30 sept. to 2 oct 17	IIT Mandi	Participation
6	Basketball	12	Invitational	30 sept. to 2 oct 17	IIT Mandi	Participation
7	T.T (M)	06	Inter-Tech Uni.	6-8 oct,2017	NIT Kurukshetra	1st position
8	Chess (M)	06	Inter-Tech Uni.	7-8 oct,2017	PEC Uni. Chd.	1st position
9	Badminton (M)	06	Inter-Tech Uni.	7-8 oct,2017	PEC Uni. Chd.	2nd position
10	Badminton (W)	05	Inter-Tech Uni.	7-8 oct,2017	PEC Uni. Chd.	2nd position
11	Chess (W)	05	Inter-Tech Uni.	7-8 oct,2017	PEC Uni. Chd.	3rd position
12	Volleyball (M)	12	Inter-Tech Uni.	6-8 oct,2017	NIT Kurukshetra	Participation
13	Volleyball (W)	11	Inter-Tech Uni.	6-8 oct,2017	NIT Kurukshetra	Participation
14	T.T (W)	04	Inter-Tech Uni.	6-8 oct,2017	NIT Kurukshetra	Participation
15	Basketball (M)	12	Inter-Tech Uni.	12-13 Oct.2017	NIT Jalandhar	1st position
16	Basketball (W)	12	Inter-tech Uni.	12-13 Oct.2017	NIT Jalandhar	3rd position
17	Football (M)	18	Inter-Tech Uni.	13-14 Oct.2017	Thapar Uni.	1st position
18	Tennis (M)	06	Inter-Tech Uni.	13-14 Oct.2017	Thapar Uni.	2nd position
19	Tennis (W)	03	Inter- Tech Uni.	13-14 Oct.2017	Thapar Uni.	2nd position
20	Tennis (M)	05	Inter Uni.	11-15	GJUST	participation

				Oct.2017	Hissar	
21	Chess (M)	05	Inter Uni.	!3-!7 Oct. 2017	IK PTU Jalandha	Participation
22	Swimming (M&W)	12	Inter UnI.	26-30 Oct,2017	Panjab Uni.	participation
23	Handball (M)	16	Inter Uni.	22-26 Oct. 2017	PAU Ludhiana	Participation
24	Roller Sports (M)	09	Inter Uni.	6-10 Nov. 2017	Panjab Uni. Chd.	participation
25	Basketball (M)	12	Invitational	4-5 Nov. 2017	Jaype Un. Solan	participation
26	Basketball (W)	11	Invitational	4-5 Nov. 2017	Jaype Un. Solan	1st Position
27	T.T (M)	04	Invitational	4-5 Nov. 2017	Jaype Un. Solan	participation
28	Cricket (W)	15	Inter Uni.	14-21 Nov. 2017	MM Uni.Mulana	participation
29	Cricket (M)	16	Inter Uni.	22nd nov - 10 Dec 17	MD U. Rohtak	participation
30	T.T (M)	04	Inter Uni.	11-15 Jan.2018	Jammu Uni.	participation
31	POWER LIFTING	01	All Inter Uni.	08-11 Feb. 2018	Panjab Uni. Chd.	participation
32	Wushu (M)	01	All India I/U	20-24 Feb.2018	MDU Rohtak	3rd Position
33	Basketball (M)	12	**URJA** Invitational	16-18 Feb. 2018	TIET patiala	1st Position
34	Basketball (W)	12	**URJA** Invitational	16-18 Feb. 2018	TIET patiala	2nd Position
35	Cricket	16	**URJA** Invitational	16-18 Feb. 2018	TIET patiala	1st Position
36	Football	16	**URJA** Invitational	16-18 Feb. 2018	TIET patiala	1st Position
37	T.T (M)	04	**URJA** Invitational	16-18 Feb. 2018	TIET patiala	1st Position
38	Chess (M)	04	**URJA** Invitational	16-18 Feb. 2018	TIET patiala	1st Position
39	Badminton (M)	04	**URJA** Invitational	16-18 Feb. 2018	TIET patiala	2nd Position
40	Badminton (W)	04	**URJA** Invitational	16-18 Feb. 2018	TIET patiala	2nd Position
41	Lawn Tennis (M)	05	**URJA** Invitational	16-18 Feb. 2018	TIET patiala	1st Position
42	Athletics 100m (M)	01	**URJA** Invitational	16-18 Feb. 2018	TIET patiala	participation
43	Athletics 200m (M)	01	**URJA** Invitational	16-18 Feb. 2018	TIET patiala	1st Position
44	Athletics 400m (M)	01	**URJA** Invitational	16-18 Feb. 2018	TIET patiala	1st Position
45	Athletics 100m (W)	01	**URJA** Invitational	16-18 Feb. 2018	TIET patiala	2nd Position

46	Athletics 200m (W)	01	**URJA** Invitational	16-18 Feb. 2018	TIET patiala	1st Position
47	Athletics 400m (W)	01	**URJA** Invitational	16-18 Feb. 2018	TIET patiala	participation
48	Athletics 4x100m m	04	**URJA** Invitational	16-18 Feb. 2018	TIET patiala	1st Position
49	Athletics 4x100m w	04	**URJA** Invitational	16-18 Feb. 2018	TIET patiala	1st Position
50	Athletics L-Jump (M)	01	**URJA** Invitational	16-18 Feb. 2018	TIET patiala	2nd Position
51	Long Jump (M)	01	**URJA** Invitational	16-18 Feb. 2018	TIET patiala	2nd Position
52	Wushu	01	All India inter university	20-24 Feb 2018	MDU Rohtak	3rd Position
53	Cricket (M)	18	Inter-Tech Uni.	14-16 April, 2018	TIET Patiala	1st position
54	Athletics 100m (W)	01	Inter-Tech Uni.	14-16 April, 2018	TIET Patiala	2nd Position
55	Athletics 200m (M)	01	Inter-Tech Uni.	14-16 April, 2018	TIET Patiala	3rd Position
56	Athletics 200m (W)	01	Inter-Tech Uni.	14-16 April, 2018	TIET Patiala	3rd Position
57	Shot Put (M)	01	Inter-Tech Uni.	14-16 April, 2018	TIET Patiala	1st Position
58	Discuss Throw (M)	01	Inter-Tech Uni.	14-16 April, 2018	TIET Patiala	3rd Position
59	Javelin Throw (M)	01	Inter-Tech Uni.	14-16 April, 2018	TIET Patiala	2nd Position
60	Javelin Throw (W)	01	Inter-Tech Uni.	14-16 April, 2018	TIET Patiala	1st Position
61	Athletics 4x100m(M)	04	Inter-Tech Uni.	14-16 April, 2018	TIET Patiala	3rd Position
62	Athletics 4x100m(W)	04	Inter-Tech Uni.	14-16 April, 2018	TIET Patiala	3rd Position
	Total Students	409				

Netaji Subhash Chandra Bose Institute of Technology (**NSIT**) in association with **Springer** and **ICT Journal** hosted a three-day conference on the topic "Towards Extensible and Adaptable Methods in Computing" (TEAMC18) from 26th - 28th March 2018. TEAMC18 is the annual Computing Conference where research papers where being invited from across India as well as other countries

including UK, South Africa and USA. The conference included delegates and judges from IIT Delhi, NSIT, University of Northampton (UK), UIET, and other prestigious Institutions.

A team consisting of three of B.E. COE 2nd year students of TIET, Patiala, **Sai Siddhartha Maram, Tanuj Vishnoi and Sachin Pandey won the best Research Paper Award and also a cash reward of INR10,000.** The team presented the paper titled "**Neural Network based adaptable solution for Crop Vandalism".** The paper is currently published in the TEAMC18 Journal with an ISBN. The papers were presented by graduate students from BITS Hyderabad, BITS Pilani, Nirma University, NSIT, etc. where the team stood first amongst them.

ED Cell Thapar University bagged Third Position in ”India International Science Festival" among 68 Engineering Institutes. Event held at Anna University Chennai organized by AICTE, MHRD and CSIR on 15-16 October 2017. Awarded under the category "Institutions supporting Start-ups“.

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	116	20 **(under construction)**	Fees , Income	136
Laboratories	105	35 **2625.90 sqm** **(under construction)**	Fees	140
Seminar Halls	7	3	Fees	10
No. of important equipment’s purchased (≥ 1.0 lakh) during the current year.	106		Fees	106
Value of the equipment purchased during the year (Rs. in Lakhs)	7.96 Cr		Fee income + Research Grant	7.96 Cr
Others: (Expenditure on enhancing computer networks and infrastructures)	Rs. 602.04 Lakhs			Rs. 602.04 Lakhs

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:

	2016-17				**2017-18**			
	Newly added		**Total**				**Total**	
	No.	Value	No.	Value	No.	Value (in Lac)	No.	Value
Text Books	3204	14,72,819.71	95866		6013	48.33	101277	
Reference Books								
e-Books	-		2463		84	11.56	33901	
Journals (Print)	59 in total including Magazine	1,01, 99, 247.3	59 in total including Magazine		108 in total including Magazine	36.77	108 in total including Magazine	
e-Journals	8891+ 204		9095		8891+204		9396	
Digital Database	-		12		-	-	12	
CD & Video	500+		3500+		3	-	3500	
Others (specify) Magazines	21		21		32	-	32	
Standards	-		4284		-	-	4284	
Print Thesis	87		2695		73	-	2748	
Bound Journals	-		5145		57	-	5239	

4.4 Technology up gradation (overall)

	Total Computers	Computer Labs	Internet	Browsing Centres	Computer Centres	Office	Dept.	Others
Existing	1400	**16**	2109 Mbps	Wifi and wired computer network facility is available all around campus including academic area, hostels, faculty residence, cafeterias and all	1 dedicated computer centres	-	-	Microsoft/MATHWORKS/TURNITIN Campus agreement

				labs				
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	**16**	2109 Mbps		1	**258+**	**15**	----

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.)

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 equipment's.

CITM offers Internet access and network services to Thapar 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 backboned 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. Thapar 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 Thapar 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.

CITM OBJECTIVES:

- Maintain and Administer Internet, LAN/WLAN and allied services
- To help in the implementation of E-Governance Project
- Central Computing facility
- To make the facility available to students and faculty, and also offer possible assistance in conducting their research.
- To organize and conduct short term courses/ workshops for the students and staff of the Institute.
- Assist Institute /Departments in computerizing their activities
- Undertake Consultancy
- Provide assistance to Technological/Cultural Societal Activities
- Acquire latest knowledge and impart knowledge to the Institute staff.
- To keep track of the latest developments in Computer Hardware/ Software technologies, Web technologies.

LAN/WLAN SERVICES

- CITM has deployed LAN/WLAN on Institute Campus
- 10K End points (Students/Faculty/Staff) accessing LAN/WLAN concurrently from Academic area/Hostels/Residences
- Backboned by 15 km of SM + 1K of MM Optical Fiber connected with layer-3 and layer-2 switches and structured CAT6 cabling.
- TU LAN is distributed across VLANs
- LAN IP Segment: 172.31.0.0/16 AND 172.16.0.0/16
- Management VLAN 172.31.0.0/22 AND 172.16.0.0/22
- 82 VLANs Distributed Across LAN
- LAN is extended to new Institute Campus at Derabassi

Core Switching Fabrics

- Brocade 6610 (Stack of 4 Switches)
- Aggregate Switching capacity: 2108 Gbps
- Aggregate forwarding capacity: 1656 Mpps
- Switch 1: 48 1GbE-Ports Module, 4x40 Gbps QSFP, 8-port Dual Mode(SFP/SFP+) Module
- Switch 2: 48 1GbE-Ports Module, 4x40 Gbps QSFP, 8-port Dual Mode(SFP/SFP+) Module
- Switch 3: 24SFP 1G-ports Module, 4x40 Gbps QSFP, 8-port Dual Mode(SFP/SFP+) Module
- Switch 4: 24SFP 1G-ports Module, 4x40 Gbps QSFP, 8-port Dual Mode(SFP/SFP+) Module

Brocade 6650:

- Aggregate Switching capacity: 1600 Gbps
- Aggregate forwarding capacity: 1190 Mpps
- 56-Port 10GBASE-X SFP+ (Dual Speed 1/10GbE) Module, 2-Port 4X10GBASE-X QSFP+ (10Gbe) Module,
- 4 Port 40GBASE-X QSFP+ (40GbE) Module

Extreme Black Diamond 8806:

48 port 1GbE, 24 Port 1G SFP

Distributed Switching Fabrics

- Brocade 7250P: Switching capacity: 208 Gbps, Forwarding capacity: 154 Mpps, 8x10G SFP+, 24 1GbE
- Brocade 6450p: Switching capacity: 128 Gbps, Forwarding capacity: 96 Mpps, 4x10G SFP+, 24 1GbE
- Extreme x350: Switching capacity: 88 Gbps, Forwarding capacity: 65 Mpps, 24 1GbE, 4 x1Gb SFP Combo
- Extreme x440: Switching capacity: 88 Gbps, Forwarding capacity : 65 Mpps, 24 1GbE, 4 x1Gb SFP Combo
- Cisco 4500: 20 x1Gb Ethernet, 24 Fast-Ethernet, 16x1G SFP
- L2/L2+ Switching:
- Brocade 6430 : Switching capacity : 56 Gbps, Forwarding capacity : 42 Mpps, 4x1G SFP, 24 1GbE

- Extreme x150 : Switching capacity : 8.8 Gbps, Forwarding capacity : 6.5 Mpps, 24 Fast Ethernet

WLAN Solution from Ruckus

- Ruckus Zone Director 3000 – 4
- Ruckus Zone Director 1000 - 1
- Access Points Active: ….. (Indoor/Outdoor)
- Dual Band Radio 2.4 GHz (B/G/N) and 5.0 GHz (A/N/AC)
- Maximum concurrently Active Users: 6700
- Separate user Data and AP Management Traffic
- Traffic in 24 Hr : 13 TB (WLAN users only)
- Features: Channel Fly, Client Load Balancing, L2/L3 Roaming, Mesh, WLAN QOS, Traffic Rate Limiting, 802.11e/WMM/802.11k

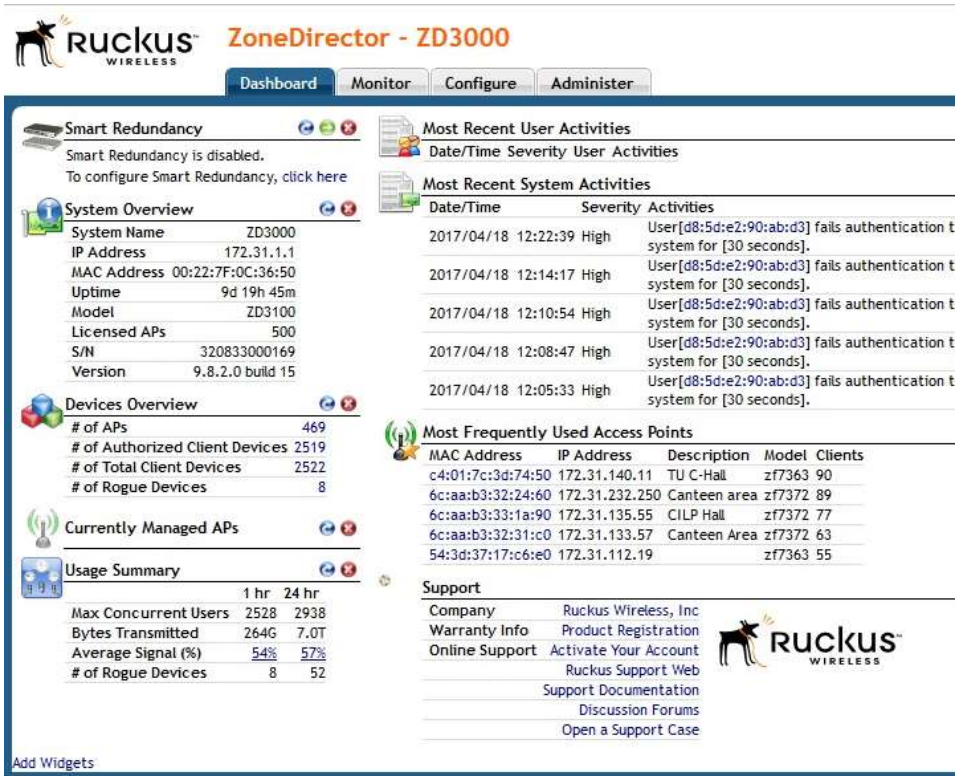


Fig1: WiFi Controller

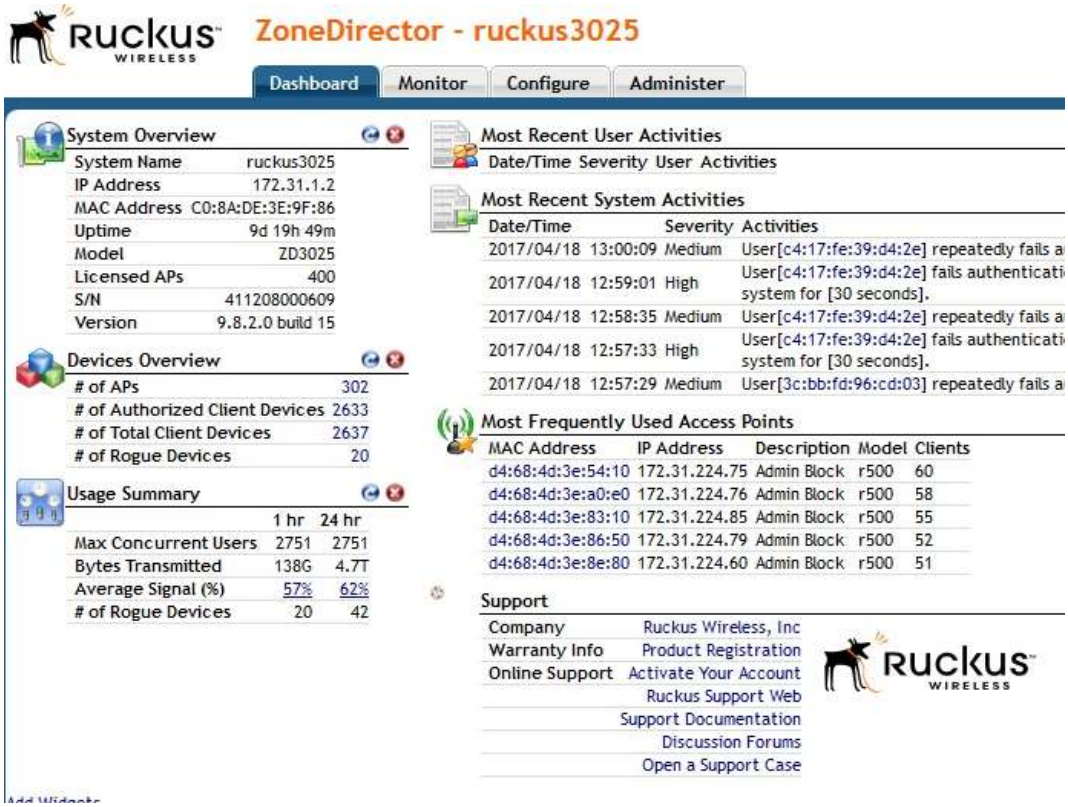


Fig 2: WiFi Controller 2

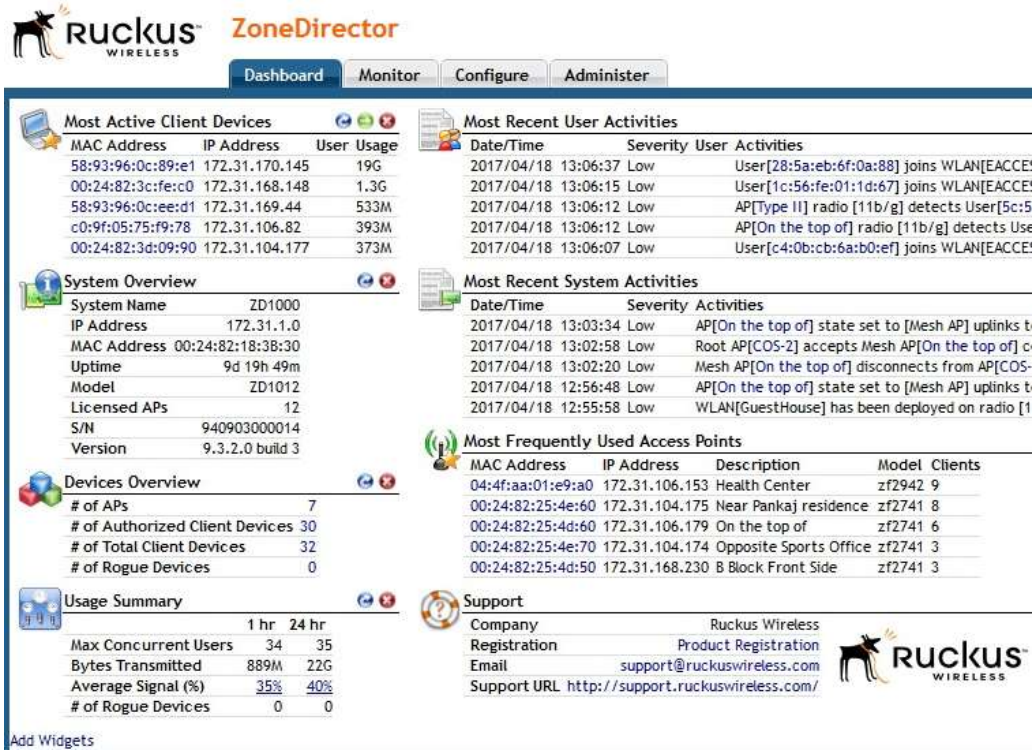


Fig 3: WiFi Controller 3

IP Surveillance:

CITM provide campus wide IP surveillance. The details are Following mentioned:

Table 2: Location Wise IP Cameras

Sr. No.	Building Name	Number of Cameras	Network Video Recorder IP Address
1	Hostel A	10	172.31.132.106
2	Hostel B	10	172.31.132.104
3	Hostel C	10	172.31.132.105
4	Hostel PG	10	172.31.132.102
5	Hostel E	6 IP Cameras Deployment is in progress	
6	Hostel G	5	172.31.132.101
7	Hostel H	11	172.31.132.100
8	Hostel I	5	172.31.132.103
9	Hostel J	90 IP Cameras Deployment is in progress	
10	Hostel K	18	172.16.8.79
11	Hostel L	18	172.16.8.80
12	Admin Blocks	60	172.31.132.108-109-110
13	Library	16	172.31.132.107
	Total	173 + 90+ 6	

INTERNET SERVICES

The following internet services are provided by CITM.

- Internet Bandwidth Provisioning
- Institute is connected to two ISP through leased lines:
- BSNL: 1 Gbps under National Mission of Education through Information and Communication Technology (NMEICT) of National Knowledge Network.
- Reliance Communications Ltd.: 1085 Mbps leased line STM-7

- 100 Mbps ELL (Extended Leased Line) Connectivity to Derabassi Campus.
- Internet access is provided on all endpoints in Institute.
- Internet Bandwidth Managed through UTM QOS policies.
- Internet hosted services are deployed through both WAN gateways for availability and load balancing.

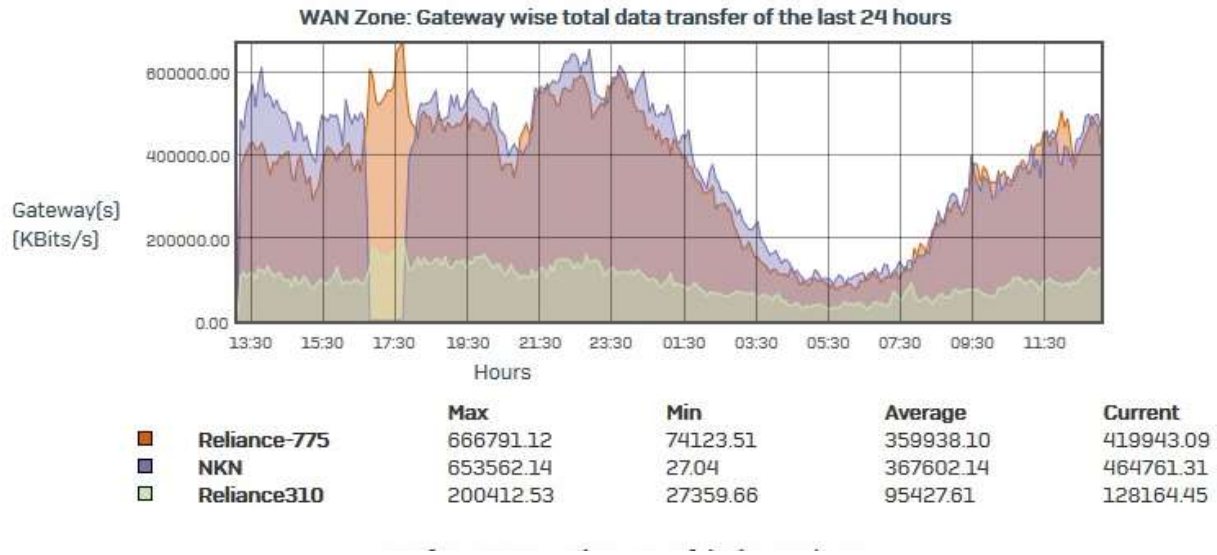


Fig 4: WAN Link Utilization

Unified Threat Management

Sophos XG 750 – 2 Nos

Maximum concurrent user LIVE: 6600

24 hrs. Traffic: 15 TB

Stateful Inspection firewall

140 Gbps firewall throughput

HA (Active-Active Mode)

Interfaces: 8 GbE Ports + 16x1Gb SFP + 4x 10Gb SFP+

Application and Web filtering

User identity and Group Identity Management

Bandwidth Management

I-View (Internal and External Server) for logging and monitoring

IPS, Gateway Level Antivirus and Anti Spyware

Hosting Services (Citrix Xen Server 6.2)

3.3.1 Institute Private Citrix Xen Cloud

Deployment Private Cloud to efficiently management IT Service Websites hosting

Servers: Dell R730 -2 no. (Intel E5-2699 v3,18 Core 2.3 GHz, 64 GB RAM, 16 TB HDD)

HP ProLiant 350p -1 no.(Intel E5-2620,12 Core 2.0 GHz , 64 GB RAM, 32 TB HDD)

Dell R720 – 4 no. (Intel E5-2609, 4 Core 2.4 GHz, 16 GB RAM, 1.2 TB HDD)

Websites Hosted

Thapar Institute Main Website

LMTSM

Webkiosk (Intranet)

Webkiosk (Internet)

QEEE (Quality Enhancement in Engineering Education Service)

Institute DNS Cache Server

Local UTM iView Server

Video Conferencing Service

Kaspersky Unified Management Service

Google analytics for Thapar website www.thapar.edu

Google analytics for Institute website www.thapar.edu are presented below.

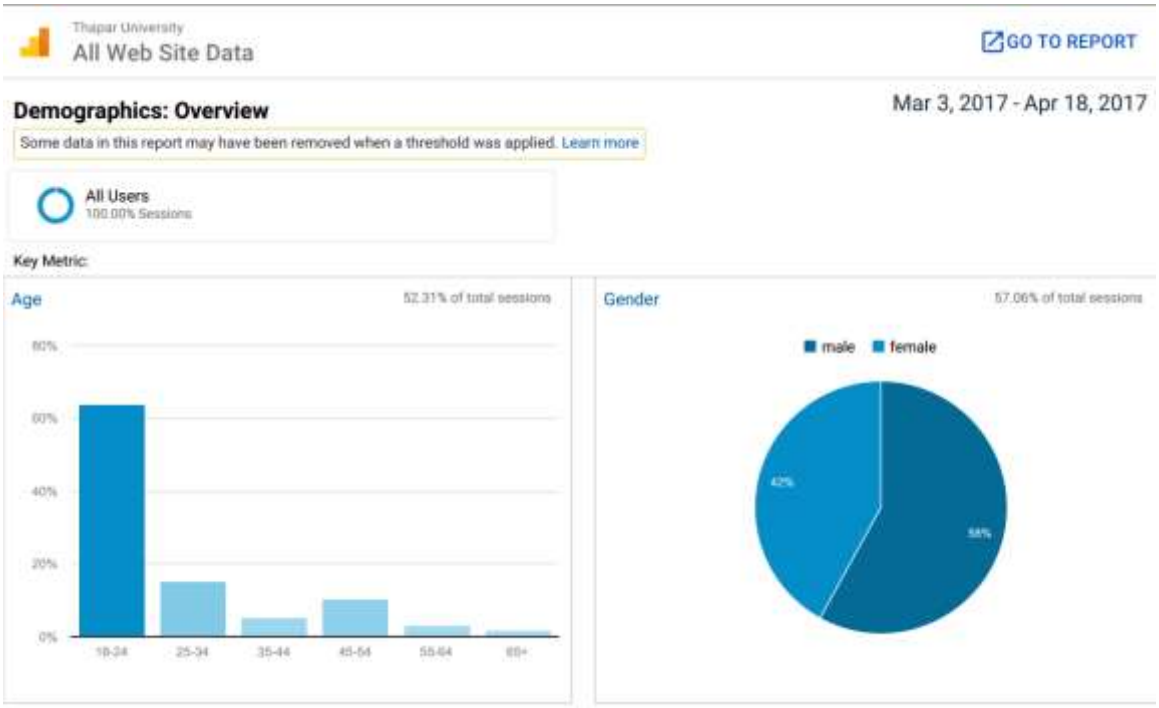


Fig : Demographics Data

3.4 Full HD Video Conferencing System

LifeSize Multi Conferencing Unit (MCU)

Multi Party: 5 ports @720p, 10 ports@480p, 20 ports @360

Support for H.323, SIP, NAT protocol

Mobility Video Conferencing

Clearsea App for anywhere any device VC

VC End Point:

LifeSize Icon 600 with 10x Camera, 65 Inch LED at Patiala

LifeSize 220 with 10x Camera, 65 Inch LED at Derabassi

E-GOVERNANCE

The centre is contributing in the implementation of ERP software that includes following modules

ERP Modules

Student Information System (SIS)

Examination

Student Fee Management (SFM)

Counseling

HRMS

Finance & Accounting System (FAS)

Purchase / Receiving and Inventory

Tax Deducted at Source (TDS)

Hostel

Web-kiosk

Student Response Survey

Student Activities

Faculty Activities

Its related support to the users of Thapar Institute.

Learning Materials

Quality Enhancement in Engineering Education (QEEE):

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

Table No 3: The details of QEEE courses running during current session Jan-April 2018:

Sr No.	Topic as per QEEE
1	Discrete Time Signals - Digital Signal Processing
2	Digital signaling for Fading Channels
4	BJT, MOSFET And Amplifiers - Analog Electronic Circuits
5	Design of feedback in Control Systems
6	Fits and Tolerance - Computer Aided Machine Drawing
7	Fundamentals of Air Conditioning
8	Project Activity - Networking Security

9	Project Activity - Data Sciences
10	Introduction to Data Sciences
11	Runtime Environments - Principles of Compiler Design
12	Basic Graph Algorithms - Design and Analysis of Algorithms
13	Object Oriented Concepts Classes and Data Abstraction - Operator Overloading Inheritance

The details of QEEE courses running during last four sessions:

Table No 4: 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

Table No 5: 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 - Enviornmental 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

Table No 6: list of courses registered with QEEE during session Aug-Nov 2016

S.no	Topic
1	Introduction To Conduction Heat Transfer - Heat Transfer
2	Introduction to Compilers - Compiler Design
3	Input and Output Streams -Interfaces, Packages Collections and Vectors, Files- OOPS
4	Shear Strength of Soils - Geotechnical Engineering
5	Classification of Signals and System - Introduction to Signals and Systems
6	Vibration - Theory of Vibration / Dynamics of Machines / Theory of Machines / Structural Dynamics
7	Linear Data Structures and Applications - Data Structures and Algorithms
8	Cloud Technology Overview - Cloud Computing
9	8085 and 8086 Microprocessor: Architecture, Assembly Language Programming and System Design - Computer Organization and Architecture

Table No 7: list of courses registered with QEEE during session Jan- April 2016

S.no	Topic
1	Heat Transfer

2	Gears - Kinematics of Machines
3	Object Oriented Concepts-Classes and Data Abstraction-Operator Overloading-Inheritance
4	Information Security and Cryptography
5	Digital Electronics
6	BJT, MOSFET And Amplifiers - Analog Electronic Circuits
7	Design of earthquake resistant design of RCC multi-storeyed frames - Design of Concrete Structures

The comparative QEEE institute performance in last four sessions:

Table No 8: QEEE Performance

Sr. No	Session	Performance Ranking
1	Jan-April 2016	Best Institute (Partner Category)
2	Aug-Nov 2016	Best Institute (Committed Category)
3	Jan-April 2017	Best Institute (Partner Category)
4	Aug-Nov 2016	Best Institute (Committed Category)

MATLAB Online Training:

Thapar Institute is a member of MATHWORKS Campus Agreement. Under this year MATHWORKS agreement, free access to following MATLAB courses to students, researchers and Faculty of this Institute

1. MATLAB Fundamentals (English)
2. MATLAB for Financial Applications (English)
3. MATLAB Programming Techniques (English)
4. MATLAB for Data Processing and Visualization (English)
5. Machine Learning with MATLAB (English)

The following training courses are organized in 2016-17.

CITM has organized onsite instructor led training on “MATLAB Fundamentals” on 17-19 March, 2016.

CITM organized onsite workshop on advanced toolbox of MATLAB on 15 April, 2017.

Apart from above online courses, there will be a 5-days onsite training from MATHWORKS on advanced toolbox of MATLAB.

NPTEL: National Programme on Technology Enhanced Learning: CITM provides online access to national programme on technology enhanced learning courses to Students and faculty to gain additional knowledge.

INSTITUTE WIDE IT MANAGEMENT AND SUPPORT

Internet Access Management and support

WAN Link Load Balancing

Firewall Management

User access Management

Inbound and outbound traffic management for TU IT Services

TU Email Management and support

TU Web Site hosting and Content Management System

LAN/WLAN Management and Support

IP Surveillance System

WEBKIOSK access Management

Support for Repair and maintenance of Hardware

Existing ERP Management

Video conferencing management and support

Access to Institute Wide Software

MATLAB access through MATHWORKS Campus wide agreement

Microsoft Ed-Vantage Program

SPSS 20.0

Kaspersky End Point Protection

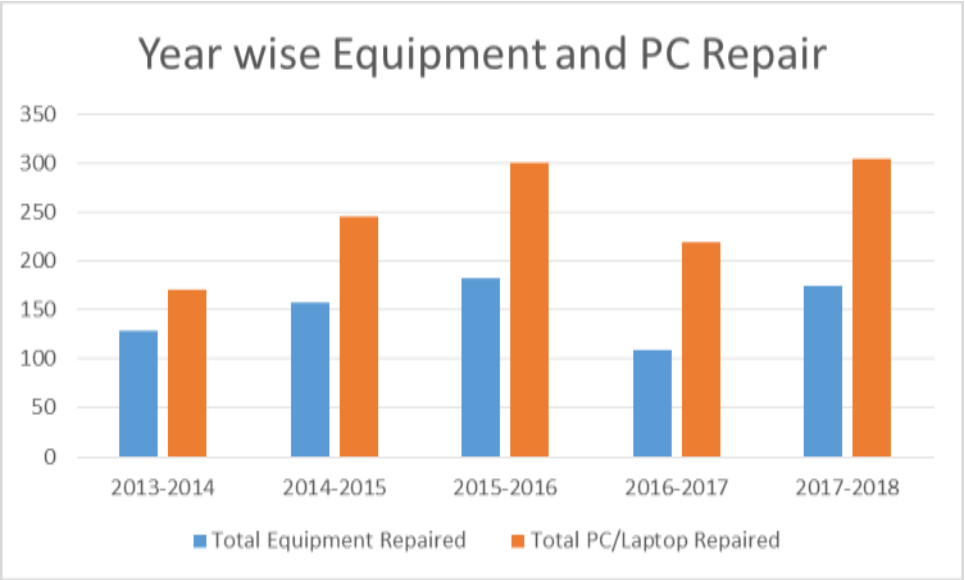
CITM Instrument and PC Repair Laboratory

Activities

- Repair & Maintenance of Instruments/ Equipment

- Repair & Maintenance of Personal Computers/ Peripherals
- Provide guidance technical assistance for purchase of new equipment
- Major Equipment
- DIGITAL STORAGE OSCILLOSCOPE 200 MHz
- HOT AIR DESOLDRING STATION
- SCIENTIFIC FUNCTION GENERATOR 1 MHz
- UNIVERSAL FREQUENCY COUNTER 1.1 GHz
- WELTRON DESOLDERING STATION
- Repair and maintenance work taken by CITM

Graphical representation includes the figures on repair and maintenance work taken by CITM during last five years.



4 UGC FUNDING

- Establishment and Up-gradation of Computer Centre under XI Plan
  Approved Grant: 48.0 Lacs
  Received Grant: 38.4 Lacs
- One Gbps connectivity NMEICT (National Mission of Education through Information and Communication Technology) project of NKN

4.6 Amount spent on maintenance in lakhs:

i) ICT	*Rs. 127.86 lakhs*
ii) Campus Infrastructure and facilities	*Rs 18996.46 lakhs*
iii) Equipments	*Rs 796.22 lakhs*
iv) Others	*Rs 325.18 lakhs*
Total:	***Rs. 20245.72 Lakhs***

Criterion – V
5. Student Support and Progression

5.1 Contribution of IQAC in enhancing awareness about Student Support Services

The IQAC mandated that we conduct Academic Reviews of engineering departments at TIET every year since 2014. Since then we have had three audits completed by a top International University, Trinity College Dublin. Each time a large team of experts from Trinity College Dublin have visited TIET and have submitted a detailed report about the findings of the review. The objective of the review was to identify the gaps between the current performance levels of TIET and those levels which would be needed to bring the Institute into the top ten for the university rankings of India resulting in TIET rising to an Institute of significance on the global stage. The academic review for the first phase of the contemporisation programme has been completed for – Civil Engineering, Computer Science & Engineering, Electronics & Communication Engineering, and Mechanical Engineering. 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 IQAC. A substantial overall plan for change is being implemented. In order to kick start this process of developing an overall plan, an operational document was developed as a first step listing a broad implementation plan for effecting the necessary changes. The operational document has several action

points which have been acted upon by faculty and staff and required a sustained effort from all of us to achieve the goals.

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 advise 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.

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

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

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^+, A, B, C,& D grades: These grades are the pass grades.

A^+ 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, 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^+, A, A^-, B, B^-, C, & C^- grades: These grades are the pass grades.

A^+ 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

•

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

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 **REGN NO** **NAME**	**CS CRD** **GD** **PNT**	**CS CRD** **GD** **PNT**	**CS CRD** **GD** **PNT**	**CS CRD** **GD** **PNT**	**CS CRD** **GD** **PNT**	**CS CRD** **GD** **PNT**	**CS CRD** **GD** **PNT**	**CS CRD** **GD** **PNT**	**CURR CRD RG** **CRD ER** **GPNTS**	**PREV CRD RG** **CRD ER** **GPNTS**	**NET CRD RG** **CRD ER** **GPNTS**	**SGPA** **CGPA**	**REMARKS**

Prepared by **Checked by** **Asstt. Registrar** **Registrar** **Controller of Exams**

REGN NO: Registration number

CS: Courses

CRD: Credit

GD: Grade

PNT: Points

CURR: Current

CRD RG: Credit regular

CRD ER: Credit earned

GPNTS: Grade points

SGPA: Semester grade point average

CGPA: Cumulative grade point average

5.3 (a) Total Number of students

UG	PG	Ph. D.	Others
6274	1324	666	0

(b) No. of students outside the state | 4180 |

(c) No. of international students | 58 |

	No	%
Men	5941	71.89%

	No	%
Women	2323	28.10%

Number of seats filled against seats reserved for various categories as per applicable reservation policy during 2017-18

Programme name	**Programme Code**	**Year**	**Number of seats earmarked for reserved category as per GOI or State Government rule**				
			SC	ST	BC	GEN	TOTAL
Bachelor of Engineering/Bachelor of Technology	BE	2017	348	59	39	1333	66
Bachelor of Engineering/Bachelor of Technology (Lateral Entry)	BE-LEET	2017	22	11	0	104	4
Master of Engineering /Maters of Technology	MEMTECH	2017	125	0	0	395	100
Master of Sciences	MSC	2017	50	0	0	140	10
Master of Computer Applications	MCA	2017	23	0	0	64	3
Master of Computer Applications-Lateral Entry	MCA-LEET	2017	5	0	0	12	1
Master of Arts	MA	2017	10	0	0	28	2
Master of Business Administration	MBA	2017	30	30	7	173	0
TOTAL			**613**	**100**	**46**	**2249**	**186**

Number of seats filled against seats reserved for various categories as per applicable reservation policy during 2016-17

	Programme Code	**Year**	SC	ST	BC	GEN	TOTAL
Bachelor of Engineering/Bachelor of Technology	BE	2016	305	54	35	1237	59
Bachelor of Engineering/Bachelor of Technology (Lateral Entry)	BE-LEET	2016	29	13	0	142	3
Master of Engineering /Maters of Technology	MEMTECH	2016	125	0	0	395	100
Master of Sciences	MSC	2016	50	0	0	140	10
Master of Computer Applications	MCA	2016	23	0	0	64	3

Master of Computer Applications-Lateral Entry	MCA-LEET	2016	5	0	0	12	1
Master of Arts	MA	2016	10	0	0	28	2
Master of Business Administration	MBA	2016	30	30	7	173	0
TOTAL			**577**	**97**	**42**	**2191**	**178**

Demand ratio -1:5.14

Dropout % - 1.9%

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

No. of students beneficiaries	Nil

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

2017-18	2016-17	2015-16	2014-15	2013-14
138	101	83	28	6

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 | Above 1000 |

5.7 Details of campus placement (2017-18 UG only)

On campus			***Off Campus***
Number of Organizations Visited	Number of Students Participated	Number of Students Placed	Number of Students Placed
322	1730	1343	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
450	02	--

No. of students participated in cultural events

State/ University level	National level	International level
3200	150	

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

	State/ University level	National level	International level
Sports:	33	02	01
Cultural:	08	8	1

5.10 Scholarships and Financial Support:

	Number of students	Amount (Rs IN LAC)
Financial support from institution	879	984.54
Financial support from government	66	94.52
Financial support from other sources (alumni)	6	696
Number of students who received International/ National recognitions	NIL	NIL

5.11 Student organised / initiatives

Fairs	: State/ University level	5	National level	04	International level	01
Exhibition:	State/ University level	08	National level	04	International level	

5.12 No. of social initiatives undertaken by the students 06

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 specialization 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 specialize 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 led 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 organizations 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

Infrastructure

Over Rs 400 cr. spent on campus infrastructure development. The new construction during 2016 till date spreads across 90000 sq.m comprising of Learning Centre (Computer Science block, Modern and iconic lecture halls), Library and student accommodation. TIET has also rolled out a rolling program to refurbish existing facilities that includes modernization of labs (56 labs completed in three years) and other academic infrastructure.

Mccullough-Mulvin Architects developed 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

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

Created the Engineering Chair named as BM THAPAR Chair Professor in Engineering and the Computer Science Chair titled as LM THAPAR Chair Professor in Computer Science.

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, 2019.

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

- From Teacher Centered Learning to Student Centered and Outcome Based learning.
- 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. 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.

- 300 faculty members from all disciplines trained in New Directions Program on pedagogical improvements featuring curriculum development, assessment, outcome based learning, self-directed learning, scholarship etc. offered in groups of 20 during 2016, 2017 and 2018.
- Setting up of an Experiential Learning Centre under the mentorship of a top Professor from
- University of Waterloo, Canada who spends 4 months a year at TIET leading this initiative.
- Establishment of a Venture Lab in partnership with University of Groningen where several
- Companies are getting incubated and all students are exposed to entrepreneurship and innovation programs.
- Major examination reforms in which all end semester exam papers are reviewed by an external examiner before the examinations begin. The review is to ensure learning outcome are met.

Pedagogy

The teaching pedagogy employed for the engineering programmes offered at TIET 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

TIET sponsored two high impact Chair Professors (research) positions at Trinity in thematic research areas of interest to both partners. The Professors spend time both at Thapar and Trinity and 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 is also setting 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 will identify research thematic areas in consultation with TCD which will be pursued during the next 5 years.

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 in October 2015.

6.3.4 Research and Development

TIET has set up a Research Committee to oversee 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 reviews the metrics for measurement of research output (Publications, PhD student(s), research funding, innovation and impact). Some key parameters on research indices are as under:

- Institute's-index is 62;
- Over 900+ publication annually; (Source: Scopus)
- 120+ sponsored research projects.
- Highest number of publication/faculty amongst peer institution as per QS ranking;
- Citation per publication of 6.85 in Web of Science and 6.2 in Scopus
- Multilevel collaboration with International Universities
- Identified and conceptualized areas for establishment of COEs include, Smart cities, Big data,
- Advanced manufacturing, Food security, Nano science and Animation & Gaming
- Ongoing research activities in centres such as CORE, SAI lab
- 5% of faculty with H index >10;

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), 34 were completed during the year under review and 111 projects are ongoing and progressing towards their completion. 37 new projects were received during the year 2017-18. The total funding received during the year was Rs. 1266.14 Lacs. During the year, 836 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.

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, Encyclopedias, 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 automatics 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.

The University has organized 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.

6.3.7 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.

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 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

Faculty Name	Qualification	Designation	DoB	DoJ
Dr. Raman Kumar Goyal	PhD	Asst Prof	16-Dec-85	10-Jul-17
Dr. Rajesh Mehta	PhD	Asst Prof	16-Dec-76	25-Jul-17
Dr. Manju	PhD	Asst Prof (Visiting)	23-Feb-87	14-Jul-17
Dr. Anjali Anand	PhD	Lecturer (Contr)	22-Jul-87	15-Jul-17
Ms. Swati Kumari	ME/MTech	Lecturer (Contr)	5-Nov-89	2-Jan-17
Ms. Smita Agarwal	PhD	Lecturer (Contr)	30-Dec-83	21-Jul-17
Ms.Sukhnandan Kaur	PhD	Lecturer (Contr)	1-Dec-84	28-Jul-17
Mr. Hemant Kumar Gianey	Phd	Lecturer (Contr)	19-Sep-76	28-Jul-17
Ms. Gaganpreet Kaur	ME/MTech	Lecturer (Contr)	4-Nov-90	9-Aug-17
Mr. Sanjeev Rao	ME/MTech	Lecturer (Contr)	1-Nov-85	7-Aug-17
Ms. Arzoo Miglani	ME/MTech	Lecturer (Contr)	19-Dec-91	7-Aug-17
Mr. Abhishek Jain	ME/MTech	Lecturer (Contr)	12-Jan-87	7-Aug-17
Ms. Prabhleen Juneja	ME/MTech	Lecturer (Contr)	4-May-85	7-Aug-17
Mr. Harpreet Singh	ME/MTech	Lecturer (Contr)	14-Nov-89	7-Aug-17
Mr. Parampreet Singh	ME/MTech	Lecturer (Contr)	11-Dec-87	7-Aug-17
Ms. Shanky Goel	ME/MTech	Lecturer (Contr)	23-Nov-87	7-Aug-17
Ms. Deep Mann	ME/MTech	Lecturer (Contr)	5-Oct-87	7-Aug-17
Mr. Jasmeet Singh	ME/MTech	Lecturer (Contr)	21-Mar-83	10-Aug-17
Ms. Navneet Kaur Kaleka	ME/MTech	Lecturer (Contr)	18-Sep-90	7-Aug-17
Dr. Sujit Kumar Patel	PhD	Asst Prof	3-Sep-83	26-Jul-17
Dr. Suhdhanshu Tyagi	Phd	Asst Prof	1-Jul-77	9-Aug-17
Dr. Anil Singh	PhD	Asst Prof	20-Aug-77	5-Jul-17
Mr. Sunil Kumar	ME/MTech	Asst Prof (Visiting)	2-Jun-86	13-Jun-17
Mr. Shireesh Kumar Rai	PhD	Asst Prof	7-Jun-85	28-Jul-17
Mr. Bharat Garg	PhD	Asst Prof	3-Sep-79	28-Jul-17
Dr. Manoj Badoni	PhD	Asst Prof	3-Apr-84	10-Jul-17
Dr. Pawan Kumar	PhD	Asst Prof	5-Mar-77	17-Jul-17
Dr. Sahaj Saxena	PhD	Asst Prof	11-Aug-87	1-Jun-17
Dr. Vipin Chandra Pal	PhD	Asst Prof	3-Jan-86	7-Jun-17
Dr. Venkata K Yanumula	PhD	Asst Prof (Visiting)	1-Jul-89	10-Jul-17
Mr. Tanmay Pal	PhD	Asst Prof (Visiting)	27-Dec-85	24-Jul-17
Dr. Anshu Mli Gaur	PhD	Lecturer (Contr)	25-Jul-83	20-Jul-17
Mr. Paramane Ashish Sharad	PhD	Lecturer (Contr)	7-May-91	4-Aug-17
Dr. Amandeep S. Oberoi	PhD	Asst Prof	9-Jun-84	20-Jul-17
Dr. Arshpreet Singh	PhD	Asst Prof	1-Jan-86	13-Jul-17
Dr. Ravinder S. Joshi	PhD	Asst Prof	19-Jun-80	13-Jul-17
Dr. Gautam Setia	PhD	Asst Prof	16-Jun-87	5-Jul-17
Dr. Rajendra Kumar	PhD	Asst Prof	20-Dec-83	1-Jun-17
Dr. Sachin Singh	PhD	Asst Prof	17-Jun-88	10-Jul-17
Mr. Sayan Sadhu	ME/MTech	Lecturer (Contr)	13-Jun-83	23-Jun-17
Mr. Satish Kumar Sharma	PhD	Lecturer (Contr)	27-Jul-85	28-Jul-17

Dr. Bhupesh Goyal	PhD	Asst Prof	22-Oct-82	24-Jul-17
Dr. Dibyendu Mallick	PhD	Asst Prof	12-Jul-82	4-Aug-17
Dr. Banibrata Maity	PhD	Asst Prof (Visiting)	11-Mar-89	1-Jun-17
Ms. Shilpi Tyagi	PhD	Asst Prof (Contr)	22-Jun-84	15-Jul-17
Ms. Sheena Chabbra	MBA	Lecturer (Contr)	2-Aug-86	7-Aug-17
Dr. Sangeeta Yadav	PhD	Lecturer (Contr)	10-Jun-82	1-Aug-17
Dr. Mukesh Kumar	PhD	Asst Prof (Contr)	16-Sep-79	8-Aug-17
Dr. Jayant T Kolte	PhD	Asst Prof	18-Dec-82	28-Jul-17
Dr. Nidhi Kalra	PhD	Asst Prof	5-Sep-90	28-Jul-17
Dr. Chandni	PhD	Asst Prof (Contr)	28-Aug-87	28-Jul-17
Dr. Prabal Pratap Singh	PhD	Asst Prof (Contr)	14-Apr-85	9-Aug-17
Dr. Meenu Rani	PhD	Lecturer (Contr)	3-Sep-89	25-Jul-17
Dr. Mamta Gulati	PhD	Asst Prof	28-Jul-84	28-Jul-17
Dr. Inderjit Kaur	PhD	Asst Prof	23-Sep-75	11-Aug-17
Dr. Varun Chotia	PhD	Asst Prof (Contr)	25-Nov-88	16-Aug-17
Dr. Bholu Ram Yadav	PhD	Asst Prof (Contr)	10-Aug-85	2-Jan-17
Mr. Vaibhav Agarwal	ME/MTech	Lecturer (Contr)	12-Jan-88	27-Jul-17
Dr. Manish Kumar	PhD	Asst Prof	21-Feb-87	5-Sep-17
Dr. Ratnesh Kumar Raj Singh	PhD	Asst Prof	1-Nov-95	13-Nov-17
Dr. Surinder Kaur	PhD	Professor (Visiting)	30-May-56	30-Oct-17
Mr. Rohit Ahuja	ME/MTech	Lecturer (Contr)	23-Oct-87	1-Dec-17
Mr. Rajendra Kumar Roul	ME/MTech	Asst Prof (Visiting)	25-May-73	1-Jan-18
Dr. T.P. Singh	PhD	Professor	11-Jul-56	8-Jan-18
Mr. Himanshu Chawla	ME/MTech	Lecturer (Contr)	11-Aug-89	9-Jan-18
Ms. Anjali Chauhan	ME/MTech	Lecturer (NT)	1-Mar-93	1-Jan-18
Mr. Devender Sharma	ME/MTech	Lecturer (NT)	5-Nov-92	1-Jan-18
Ms. Kanu Goel	ME/MTech	Lecturer (NT)	9-Oct-91	1-Jan-18
Mr. Sahil Sharma	ME/MTech	Lecturer (NT)	30-Dec-90	1-Jan-18
Ms. Sonal Kukreja	ME/MTech	Lecturer (NT)	30-May-90	1-Jan-18
Ms. Sukhandeep Kaur	ME/MTech	Lecturer (NT)	9-Sep-82	1-Jan-18
Ms. Rashmeet Toor	ME/MTech	Lecturer (NT)	25-Nov-91	1-Jan-18
Mr. Shubham Goel	ME/MTech	Lecturer (NT)	12-Jul-90	1-Jan-18
Mr. Aman Sharma	ME/MTech	Lecturer (NT)	30-Aug-91	1-Jan-18
Mr. Vijay Prakash	ME/MTech	Lecturer (NT)	7-Dec-88	1-Jan-18
Ms. Muskaan Singh	ME/MTech	Lecturer (NT)	28-Oct-91	1-Jan-18
Ms. Anmol Gupta	ME/MTech	Lecturer (NT)	9-Sep-18	1-Jan-18
Ms. Jiwanpreet Kaur Virk	ME/MTech	Lecturer (NT)	10-Sep-91	1-Jan-18
Mr. Himanshu Anand	ME/MTech	Lecturer (NT)	4-Jul-90	1-Jan-18
Mr. Nagender Singh	ME/MTech	Lecturer (NT)	1-Jun-84	1-Jan-18
Mr. Rituraj Patwal	ME/MTech	Lecturer (NT)	13-Dec-90	1-Jan-18
Mr. Sandeep Sharma	ME/MTech	Lecturer (NT)	6-Nov-90	1-Jan-18
Mr. Harmanpreet Singh	ME/MTech	Lecturer (NT)	3-Nov-92	1-Jan-18
Ms. Apoorva Singh	ME/MTech	Lecturer (NT)	14-Jan-86	1-Jan-18
Mr. Jatinder Pal Singh	ME/MTech	Lecturer (NT)	6-Apr-92	1-Jan-18
Mr. Ravinder Sharma	ME/MTech	Lecturer (NT)	22-Nov-90	1-Jan-18
Dr. Dinesh Wasudevrao	PhD	Asst Prof	13-Jan-81	27-Apr-18

Rathod				
Dr. K.P. Kalyan Chakravarthy	PhD	Asst Prof (Visiting)	10-Apr-85	27-Apr-18
Dr. D.S. Broca	PhD	Professor (Analytics)	9-Jan-60	7-May-18
Ms. Divya Sharma	ME/MTech	Asst Prof (Visiting)	30-Nov-87	15-May-18
Dr. Amrik Sen	PhD	Asst Prof (Visiting)	18-Nov-83	1-Jun-18
Dr. Deepshikha Tiwari	PhD	Asst Prof	5-Jul-83	1-Jun-18
Mr. Ravi Prakash	ME/MTech	Asst Prof (Visiting)	10-Aug-85	4-Jun-18
Dr. Debabrata Ghosh	PhD	Asst Prof	28-Dec-81	11-Jun-18
Mr. Bibekananda Mandal	ME/MTech	Asst Prof (Visiting)	5-May-87	11-Jun-18
Dr. Shyamal Guchhait	PhD	Asst Prof (Visiting)	10-Jan-86	14-Jun-18
Mr. Bhabani Shankar Das	ME/MTech	Asst Prof (Visiting)	2-Jul-90	18-Jun-18
Mr. Pradeep Kumar Hota	BE/BTech	Asst Prof	19-Aug-83	28-May-18
Dr. Prabhat Kumar Jaiswal	PhD	Asst Prof	8-Dec-83	2-Jul-18
Dr. Pravindra Kumar	PhD	Asst Prof (Contr)	20-May-80	2-Jul-18
Dr. Munish Kansal	PhD	Asst Prof (Contr)	23-Sep-86	2-Jul-18
Ms. Urvashi	ME/MTech	Lecturer (Contr)	24-Sep-89	2-Jul-18
Ms. Rajan Gupta	ME/MTech	Lecturer (Contr)	1-Dec-88	2-Jul-18
Dr. Teena Narang	PhD	Lecturer (Contr)	28-Oct-79	2-Jul-18
Dr. Vishal Gupta	PhD	Asst Prof (Contr)	17-Mar-86	2-Jul-18
Dr. Jai Prakash Tripathi	PhD	Asst Prof (Contr)	18-Jan-89	2-Jul-18
Ms. Jaskirat Kaur	ME/MTech	Lecturer (Contr)	17-Sep-87	2-Jul-18
Ms. Niharika Anand	ME/MTech	Lecturer (Contr)	6-Aug-84	2-Jul-18
Mr. Akhilesh Mathur	ME/MTech	Lecturer (Contr)	14-Aug-87	2-Jul-18
Dr. Rajneesh Sharma	PhD	Asst Prof (Contr)	28-Aug-87	2-Jul-18
Dr. Geetanjali	PhD	Lecturer (Contr)	4-Dec-80	2-Jul-18
Dr. Raj Kumar Das	PhD	Asst Prof (Contr)	28-Oct-82	2-Jul-18
Mr. Nikhil Pachauri	ME/MTech	Lecturer (Contr)	17-Oct-85	2-Jul-18
Mr. Ashutosh Trivedi	ME/MTech	Lecturer (Contr)	8-Jul-87	2-Jul-18
Ms. Kumari Nidhi Lal	ME/MTech	Asst Prof (Visiting)	29-Jun-18	2-Jul-18
Mr. Akhand Rai	ME/MTech	Asst Prof (Visiting)	28-Aug-87	2-Jul-18
Mr. Mayank Agarwal	ME/MTech	Asst Prof (Visiting)	21-Sep-89	6-Jul-18
Mr. Dinesh	ME/MTech	Asst Prof (Visiting)	22-May-87	9-Jul-18
Mr. Ankit Kumar Singh	ME/MTech	Asst Prof (Visiting)	2-Jul-86	10-Jul-18
Mr. Sridhar Joshi	ME/MTech	Asst Prof (Visiting)	14-Nov-76	29-Jun-18
Dr. Priya Vashisht (Alreja)	PhD	Lecturer (Contr)	4-Nov-80	6-Jul-18
Dr. Yogesh Narayanrao Tatte	PhD	Asst Prof	8-Apr-88	9-Jul-18
Dr. Pankaj Narula	PhD	Lecturer (Contr)	14-Mar-84	16-Jul-18
Dr. Rajesh Kumar Shukla	PhD	Asst Prof (Visiting)	2-Feb-79	16-Jul-18
Mr. Ch. Sateesh Kumar	BE/BTech	Asst Prof (Visiting)	11-Dec-88	12-Jul-18
Dr. Debojyoti Pandit	PhD	Asst Prof (Contr)	1-Jul-84	16-Jul-18

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.	One ongoing project -"PREPARATION AND CHARACTERIZATION OF POLYMER/CERAMIC FIBRE AND CELLULOSE COMPOSITE PAPER FOR ELECTRICAL INSULATION" by Dr Rajeev Mehta One more projects has been started. Project was initiated by Dr. Gangacharyulu. 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.
4.	ISA Group Lille, FRANCE	Student Exchange and Faculty Exchange with Biotechnology Department. Scholarship for more than 100 students from Indian and French Govt. One faculty had gone Group Lille, France during the summer vacation to deliver a lecture on academic and research exchange programmes at TIET Attended two meeting/discussion sessions on environmental Food Biotechnology with Prof. Bertrand, Head Environmental Group. Initiatives on Joint Research Projects in the area of Bio-Process and Green Polymer Application for Remediating Environment.
5.	University of Waterloo, Canada	Dr. S. Bedi from UW visited TIET for two months and delivered 10 lectures on CAD / CAM/ Design.
6.	TCS PhD Research MoU	TCS is sponsoring selected PhD Candidates for a Maximum of 4 years. Department currently have 3 TCS Research Scholars. A Stipend of Rs. 23,000 per month is given for the First 2 Years and Rs. 25,000 per month for next 2 years by TCS. TCS supports participation of TCS Research Scholar and respective guide in 1 International Refereed Conference, held outside India, and 2 National Conferences in India. TCS awards One-time Rs 1 Lakh Contingency Amount to the Institute for every TCS Research Scholar to meet any incidental

S. No	Name	Activity
		expenses. TCS also has a detailed plan for continuing interaction between TCS Research Scholars and TCS Innovation Labs.
7.	CISCO Net Academy	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. 150 students got their modules cleared and attained discounts to appear in CCNA industrial exam.
8.	EC-Council, USA	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. 5 students successfully completed C|EH exam and have attained Certified Ethical Hacker Certification from EC-Council USA
9.	Microsoft Edvantage Program	Under Microsoft Edvantage program, all Faculty and staff members can use latest legal software provided by Microsoft. The faculty members have the benefit of using all Microsoft products and keys from this website.
10.	Oracle Academy	Under this program CSED, received licensing to Oracle Database products on huge discount, also learning material is freely downloadable. Students can appear for Oracle certification at discounted price
11.	Apple University Program	CSED started with Course on Mobile Application development which emphasizes app development under android and iOS platform. CSED received free SDK (Software Development Kit) and are part of AUP for uploading apps developed by students after testing done by Appstore.
12.	IBM University Program	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, 10 faculty members and students were trained under this program for Rational Software Architecture (RSA)
13.	Infosys Campus Connect	Launched by Infosys in May 2004, CC is a unique academia-industry initiative to "architect the education experience". Goal is to build a sustainable partnership with engineering education institutions in India and abroad for mutual benefit; producing "industry ready" recruits. • Around 800 students got professional benefits from such

S. No	Name	Activity
		training. • CSED has got critical inputs on Curriculum changes • Planning to Set up of Centre excellence in thrust areas of CS (initial proposal is being prepared)
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	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. 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. Following Equipment's were Funded by Intel under this program IXP1200 NP (2), IXP2400 NP (2), IXP425 (2) Kits.
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 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)	Student and faculty exchange as well as scholarships and waivers for the students for the Master programme at EFREI.

S. No	Name	Activity
	FRANCE.	
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. - Hardware infrastructure required for the task procured - - CUDA teaching centre approved for TIET
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 • Research Orientation including supporting lab infrastructure. • Pedagogy (including teaching-learning center) • Governance Structure • Physical Infrastructure • Faculty training and development • Develop programs in Humanities and Liberal Arts etc
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	Entrepreneurship, Innovation and Psychology: a) to exchange, on a reciprocal basis, faculty and students for limited periods of time for the purpose of education and /or research. b) to exchange knowledge, faculty and academic staff for short-term and, as funding and other circumstances permit, longer-term projects and visits. c) to exchange information on research and educational programmes, d) to exchange information on teaching, learning material and other literature relevant to their educational and research programmes, e) to explore over time other international partnership activity to be defined.
29.	Tel Aviv University	2. Examine possibility of developing an undergraduate engineering program in Systems Engineering 3. Encourage student to participate in TAU's Summer programs in Cyber, IP, Innovation and Entrepreneurship and Food security etc. 4. Explore mobility of staff and students for education and /or research including Joint supervision of PhD students. 5. Enable joint research proposals to external funding agencies. 6. Use TAU's expertise in Clinical/Cognitive psychology program to strengthen TU's MA Psychology program. 7. Promote post-doctoral fellowships for Thapar faculty at TAU. 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. 9. Jointly propose and engage in research or training programmes sponsored by funding agencies, and to invite each other's faculty to participate therein.
30.	University of New South Wales , Sydney Australia	Student exchange and academic cooperation, joint research ,post doc fellowship etc.
31.	University of Twenty	Student and academic staff exchange.

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

Student

- 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 Technical Vocational subject OR Minimum 60% (55% for SC/ST candidates) marks in a Diploma recognized by AICTE or a state board of technical education of at least 3-year duration.

- has secured at least 72 aggregate marks (54 marks for SC/ST candidates) in JEE (Main)-2018. 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 75% marks (70% for SC/ST candidates) in aggregate of three subjects, namely, Physics, Mathematics and any one subject out of Chemistry, Biology, Biotechnology and Technical Vocational subject.

- has secured at least 60 aggregate marks (42 marks for SC/ST candidates) in JEE (Main)-2018. This clause shall not be applicable for the PGN, GoI, JKM, JK students & N-E students as mentioned at clause 1.3).

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 Technical Vocational subject.

- has secured at least 45 aggregate marks (30 marks for SC/ST candidates) in JEE (Main)-2018. This clause shall not be applicable for the PGN, GoI, JKM, JK students & N-E students)

- possesses a good moral character.

- is a citizen of India.

- is born on or after October 1, 1993 (5-years relaxation in age for SC/ST/PH candidates).

- The admission shall be made on the basis of merit of score in JEE (Main)-2018.

- The first five toppers of the recognized Boards of India in the examinations held in 2018, shall be given direct admission to the first year of UG program, with the condition that they must have appeared in JEE (Main)-2018 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 (Non-Medical) at 10+2 of a respective board shall be considered.

B.Tech Biotechnology

- has passed 10+2 or equivalent examination with at least 60% marks (55% for SC/ST candidates) in aggregate of three subjects, namely, Physics, Chemistry and, Biology.

- has secured at least 20% aggregate marks (15% for SC/ST candidates) in NEET-2018.

- 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, Chemistry, and Biology.
- has secured at least 15% aggregate marks (10% for SC/ST candidates) in NEET-2018.
- possesses a good moral character.
- is a citizen of India.
- is born on or after October 1, 1993 (5-years relaxation in age for SC/ST/PH candidates).
- The admission shall be made on the basis of merit of score in NEET-2018.

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

6.4 Welfare schemes for

Teaching	Yes
Non teaching	Yes
Students	Yes

6.5 Total corpus fund generated | As on 31-7-2018 is Rs 39.17 crore

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 whose 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:

Examination Mark Sheet: Mechanical Engineering Department – Year

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	
Mean														
Minimum														
Maximum														
Std Dev														
Failure rate (%)														
AVGP														

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:

Name of the student: X		
Semester /Term	**CGPA**	
	Actual	**Rounded off**
I	6.92	6.92
II	7.16	7.20
III	7.08	7.10
1V	6.96	7.00
V	7.45	7.50
VI	7.62	7.62
VII	7.88	7.90
VIII	7.97	8.00

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

6.11 Activities and support from the Alumni Association

Scholarships and Placements/Training

6.12 Activities and support from the Parent – Teacher Association

NA

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. <u>Innovations and Best Practices</u>

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

Apart from being a leading institute in undergraduate and post graduate education, TIET puts a strong emphasis on basic and applied research. TIET aims to reform teaching delivery within our subject disciplines by bringing in learning from research activities.

Research is a core component of the mission of TIET and is the cornerstone for providing the best possible educational experience for students, for training research leaders of the future, for creating a vibrant environment of inquiry, and for fostering partnerships with our local and global communities – including industry, governments, and other institutions. At TIET there is an inextricable link between teaching and research; the essential thread is learning.

Over the last 5 years, TIET has experienced remarkable growth in research activity and has become one of India's most research-intensive institutions. Clear evidence of this is the upward trend in the quantum of citations, publication and collaborative works.

TIET Research Output (Scopus Data as on August 7, 2018)
Total Documents: 4982; **Total Citations:** 31445; **H-Factor:** 58; **Average citations per documents:** 6.31

The spike is the number of publications is visible in the SCOPUS as well as Web of Science databases. Score of 6.85 (WoS) and 6.31 (SCOPUS) citations per article demonstrates the qualitative improvement in research. The institute today has an H-index of 58, with several faculty members having an h-index equal to or over 10.

87% of the regular faculty today holds a PhD. as compared to just 50%, 5 years back. This growth is also attributed to the significant and transformational investments made in the research space and infrastructure.

Initiatives undertaken by TIET include:
Contemporization Program:

- 70 Cr earmarked for lab development between 2015-2020
- Introduction of experiential learning
- Faculty training and development program delivered through the CAPSL

Joint research chairs: Two sponsored research professorships at Trinity. The professor is expected to spend time both at TIET and Trinity and would lead a major research effort which will culminate in setting up the research centres at TIET over the next few years

Budget: About 15% of the TIET's budget is marked for R&D activities.
Faculty recruitment: TIET does not recruit any faculty without PhD since 2011.
PhD evaluation: There is a stringent requirement for evaluation of PhD. Thesis wherein the student is required to publish at least 2 SCI papers before submission

Other initiatives include:

- Faculty Selection norms laying clear focus on research
- Initiation of Initial research grants of INR 5 Lakhs to new faculty
- Performance Incentive Scheme
- The Scopus data shows an impressive growth in publications over the years and this is one of the significant contributors in enhancing TIET ranking in NIRF, entry into QS and Times World Rankings.
-

Further steps: Our current practice of faculty selection/promotion and PIS is purely based on number of publications, sponsored projects and Ph.D. guidance. This will now be modified to include quality parameters (Citations & H-Factor) even at the highest academic level. This will bring about a significant change in quality of research output.

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.

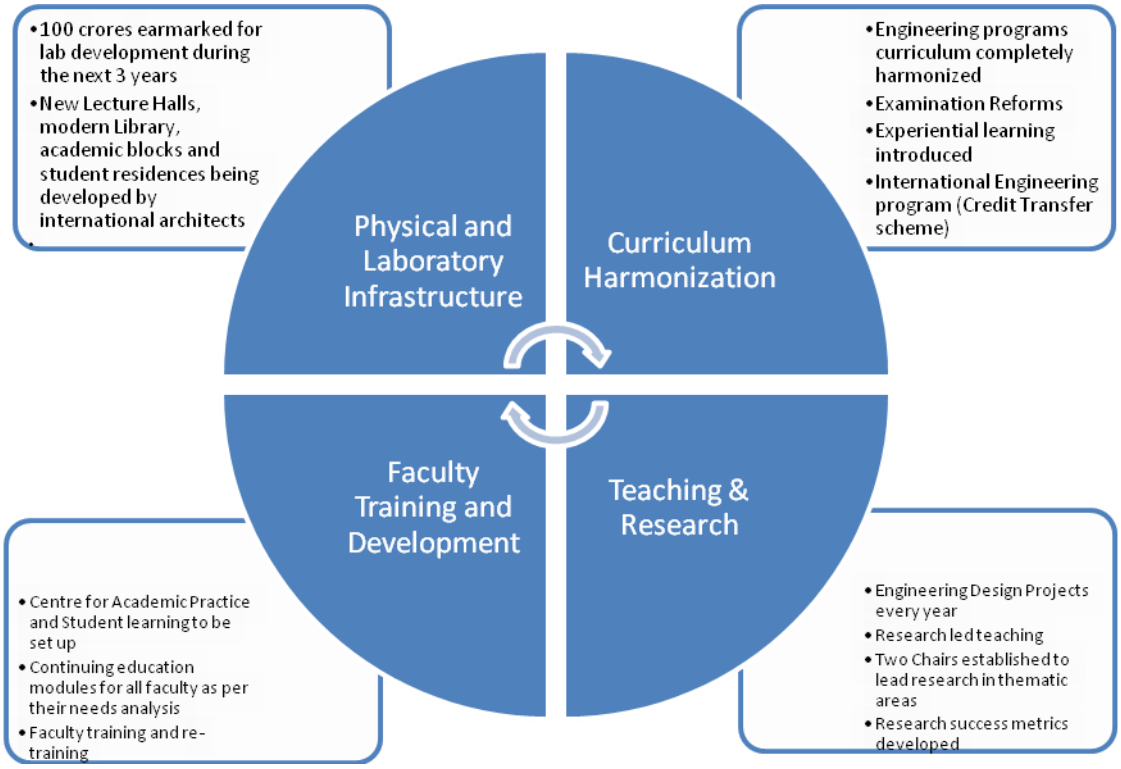
Some other initiatives of IQAC are listed below:

- 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 equipment 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 Contemporarization 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 an 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 Hostel

New Girls Hostel

Gymnasium

Venture Lab

An Innovation Centre/Venture Lab is 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 provides coaching, expert advice, seed funding and access to space and facilities needed to test out and launch new ventures. The program supports students in developing investor-ready ventures and is 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 - I

1. Title of the Practice

To prepare TIET faculty for a student-centred approach to learning, through a programme of workshops that promotes professional development and acquisition of key skills.

2. Objectives of the Practice

TIET's contemporisation programme is committed to further develop, among other things, its teaching, learning and research culture. At the moment, TIET is committed to deliver a full change and development programme that will contribute to the realization of this aspect of the contemporisation programme. This programme is running under the academic mentorship of Trinity College Dublin. Following a comprehensive needs analysis conducted by survey, workshops, and consultation meetings we now have a better understanding of the development needs, and as a result a tailor bespoke programme has been developed that is delivering more meaningful results for Thapar.

We believe that simply delivering modules will not address the culture and organization changes that will need to happen if Thapar is to realize the teaching, learning and research objectives of its contemporisation programme. We need an approach that develops a teaching, learning and research culture that builds on existing strengths within Thapar and that also addresses gaps. The first priority is to address with Thapar staff the paradigm shift needed from teaching to learning, and to teaching, learning and research, shifting emphasis from teachers as content experts to teachers as facilitators of student-centred learning. This will support a whole-institutional approach to teaching and learning and facilitate a broad adoption of this new learning paradigm.

3. The Context

The needs analysis showed that the challenges of achieving change in teaching & learning at TIET are multifaceted, partly due to the foundational level of the starting point at Thapar, partly due to the weight of work needed to be addressed to ensure change at an institutional level, and partly due the necessity to do things very differently. While professional development can provide a foundational springboard for academics in the area of teaching and effective learning, survey analysis and focus groups showed that a cultural shift in TIET is needed in order to achieve its strategic teaching and research goals – in short, the 'teaching' culture needs to change to a 'teaching & learning' culture.

Broad-scale change

There is undoubtedly opportunity for Thapar to enact a broader teaching & learning role; however, change of this magnitude needs a focus not just on professional development of

individual teachers, but on institutional approaches to teaching & learning. A concentration on professional development alone will certainly have impact, but impact will be at the individual level (those who attend professional development modules); change of this scale needs to impact more than one academic at a time. Professional development should not be the final destination but the means to positively impact teaching & learning at multiple levels. Changing professoriate is only one piece of the puzzle. Change in the nature of learning and scholarship at Thapar also needs to be addressed. The challenges facing TIET called for a cultural shift in paradigms, and a parallel change in the structures that uphold them.

4. The Practice

TIET is supporting teachers through workshops and programmes that improves or changes their individual perspectives on student learning. It was paramount to develop a teaching & learning framework that will facilitate the adoption and implementation of new and sustainable learning paradigms – particularly in the area of learner-centred approaches, active learning, curriculum and assessment.

Constraints: Thapar up till 2015, like most Indian Institutions, promoted teacher-centred learning, and the teaching-research nexus was distinctly skewed in favour of teaching. Without a bespoke teaching & learning framework designed for and with Thapar to inform a teaching & learning strategy over an ample time period, fulfilment of a rigorous research and contemporisation agenda was less likely to succeed.

Based on the needs analysis report, TIET has conducted for all its staff teaching and learning modules in the following areas:

- Assessment Curriculum
- Teaching-research nexus
- Class management/large group teaching Learner-centred teaching
- Professional Development.

5. Evidence of Success

TIET faculty has completed five core workshops during the course (Summative; i.e. assessed):

- Student-Centred Learning
  Assessment
- Curriculum
- Outcomes Based Approach to Student Learning
  Sharing scholarship in teaching and learning
- Other than the above five core modules, at least two optional workshops were completed during the course (Formative; skills will complement and feed into the core modules):
- Creative Thinking and Supporting Group Work

The programme of workshops (both core and optional) has been completed in groups of 100 (divided into sub-groups of 20 each) during each year beginning 2016. The one year ‘window’ was to allow time for faculty reflection on the workshops and implementation of some of these new approaches into educational practice. This was also to allow time for meaningful feedback on assessed assignments to be provided to participants in follow on support after the programme is completed.

TIET has formally established Community of Practices (CoPs) of existing groups to revisit issues addressed in the various posters and / or could focus on assignments in terms of each person summarizing what they did and having a wider discussion. These CoPs have become self-organizing and self-sustaining; participants identify topics they want to focus on and discuss

Lunch time teaching and learning seminar are scheduled at least once a month for all faculty at Thapar which consist of 15-20 mins talk and wider discussion. Distinction holders or enthusiastic volunteers are

engaged in helping to mentor the subsequent batch. Two graduates of first batch are associated with each group of the second batch. During the poster prep sessions held in November every year, the previous batch posters are revisited e.g. In terms of their experience of the process and the product.

Best Practice - II

1. Title of the Practice

Project Semester- A Six-Month Internship programme aimed at carrying out projects and problem solving in industry.

2. Objectives of the Practice

Objectives of the project semester programme are to:

- expose the students to industrial working and the practical aspects of theoretical knowledge and skills they acquire in the Institute
- involve the students in industrial problem solving through systematic analysis and
- development of innovative solutions under the guidance of industry experts
- make students industry ready not only in technical aspects but also interpersonal skills,
- communication skills, team work, and project orientation
- improve contacts with industry through joint mentoring of student projects by industry mentors and a faculty mentor and use these contacts for improving curriculum and other aspects of teaching-learning process

Underlying principles or concepts of the practice: It is a fact that learning process becomes more effective if one sees the relevance of the subject of study and is made a part of the application of the area studied. Six-month project semester does exactly the same. Students see the practical side of their theoretical studies as they are made responsible to improve a product or a process by using their acquired knowledge. They start taking interest and own the system. They have a sense of achievement when their projects are implemented resulting in improvement. In this process students learn a lot.

3**. The Context**

Prior to implementation of project semester of six months duration, there used to be a 6 to 8 weeks training in the curriculum of BE students. It was felt with concern that students do not take such a training seriously and most of them were while away their time as industry also does not take them seriously. It was thought that a six-month term totally devoted to problem solving and carrying out projects would be effective. The challenges in the implementation of project semester were:

Adjustment in curriculum by moving all courses of studies to seven semesters to make space for a project semester. This was judiciously done without compromising on the content to be taught to the students.

Convincing industry that the students in their sixth or seventh semester had adequate knowledge and skills to carry out industrial projects aimed at problem solving and improvement and that they will be serious and could be relied upon. This was achieved through a series of visits to industry and discussion.

Arranging training for a large number of students in companies was also a challenge. For this, industry was contacted and wherever possible, help from alumni of TIET, who were occupying high position in industry was sought.

Since faculty was to be deployed on monitoring and evaluating the project semester, orientation programmes for them were also organized.

To bring seriousness on the part of all stake holders including students, faculty, and industry, complete system of evaluation was evolved and properly documented. The evaluation includes maintaining a daily diary by the students, two evaluation visits by the faculty, joint evaluation in industry and final presentation in the institute.

4. The Practice

The project semester gives the students an opportunity to translate knowledge of engineering theory into practice in a professional engineering environment. It consolidates the student's prior learning and provide a context for later work and career planning. The practice involves the following procedural steps:

1. Arranging sufficient slots in the various industrial units for project semester placement of students, in advance
2. Allocating students to various industries based on choice and merit
3. Conducting an orientation program for students before they leave for industry
4. Assigning a faculty supervisor to a group of students for mentoring, monitoring and evaluation
5. Making students, faculty mentors and industrial mentors aware about the following:

    - Reflective Diary to be maintained by the students.
    - Interim project report
    - Final report with Learning Agreement/Outcomes.
    - Viva in the Institute.
    - Joint evaluation by both mentors in the industry.
    - Preparation of goals report within one month of the start of project semester Mid-term report after three months of the start of project semester.
    - Two faculty visits for monitoring of the work of students, first within 45 days and second in the last one month.

The students at the TIET are exposed to industry problems and problem solving while they are still studying. They learn a great deal in a six-month industry internship as compared to the 6-8 weeks of industrial training prevalent in many other engineering colleges.

This learning on the part of students make them competent professional as it changes their mind set and motivates them to take their studies more seriously. These engineers are definitely better equipped to manage today's complex industry and other organization and contribute at National level than those who do not have this kind of industrial exposure. India today needs competent engineers who can help in the cause of 'Make-In-India'.

Evidence of success is apparent from the following:

1. Students are deployed on prestigious projects by the industry. Industrial mentors praise the work done by students.
2. There is a visible change in the outlook and attitude of the students. They appear more knowledgeable, confident, and grounded.
3. Industry has started providing stipend to the students thus recognizing their performance.
4. Many students are offered jobs based on their performance.

5. In many cases now, request for interns come from the industry.

7.4 Contribution to environmental awareness / protection

Green Practices

Bicycles

TIET Patiala is housed in a lush green campus of 250 acres where use of powered vehicles by students is prohibited by Institute rules. No student (other than day scholars who can bring two wheelers up to the parking spot near the main gate) is exempted from this rule. The students are encouraged to walk on nice path ways built along all roads shaded with green trees on both sides. Students, if they wish, can use bicycle to transit to various campus locations. There are adequate parking lots in hostels and academic areas for bicycles.

Public Transport

There are some e-Rickshaws that are allowed to run on the campus between hostels and academic areas at nominal rates. We have authorized these e-Rickshaws after verification of credentials of their owner and drivers. Staff and faculty members are also encouraged to use bicycles.

Pedestrian friendly roads

Dean Student Affairs in consultation with the Student Consultative Committee has designated some roads only for pedestrians in the campus for their comfort and safety. These are roads that connect the student hostels with the academic blocks. No vehicular traffic is allowed on these roads.

Plastic Free Campus

The use of polythene is not allowed in the campus and strict guidelines in this regard have already been issued to all the vendors and shops operating in the campus.

Paperless office

Various activities of the Institute like registration of students, allotment of hostels, examination, library etc. are fully automated to ensure paperless campus. We are mostly using institute ERP system or e-mails for all official communication. Other than those activities, where we cannot avoid (eg. Question papers during formal examinations) paper is seldom used.

Green Landscaping

We have a campus where we frequently run tree plantation drives through many of the student societies like NSS, Paryawaran Welfare Club, etc. We have larger varieties of trees even some trees are more than 100 years old. These trees host a lot of birds and one can enjoy the scenic beauty of our national bird Peacock at our campus. We have also setup a nature park on campus with hundreds of trees and walk ways through the woods. All the residents of campus are fully aware of their responsibility towards nature and help to maintain the clean and green campus.

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.

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 2

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 – Teacher Led, Self-Paced, Peer to Peer and Social Learning. This would entail a bold move towards teachers supporting active, deep and independent learning through group works, assignments, internships etc. It would also mean that students would have increased responsibility and accountability for their learning. To enrich peer to peer learning and create diversity in cohort – TIET would have programs with mixed audiences. For example, all undergraduate, postgraduate, doctorate and executives who have taken same electives would be brought in the same room where different 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 *Signature of the Chairperson, IQAC/ Director*

_____***_____

Annexure-1

An academic review was undertaken by a Trinity Review Team during Feb 2018:

Trinity Academic and Administrative Review Team undertook an annual review visit to Thapar Institute of Engineering and Technology (TIET) from 25th-28th February 2018. The purpose of this report is to update and extend previous reports (November 2014, February 2016, and January 2017). In its components, the reviewers have sought to:

- Assess the structure and effectiveness of administrative support available to academic units at TIET;
- Evaluate and report on the continuing TIET contemporisation project;
- Provide an updated review of the Computer Science, Electronic & Communication Engineering, Civil Engineering and Mechanical Engineering academic departments for the period 2017-2018;
- Appraise TIET staff participation within the CAPSL staff development programme and evaluate the impact of the programme on teaching delivery at TIET.

A 15-member Trinity team visited Thapar Institute Members following an overview and consideration of major findings, this Academic Review Report considers matters relating to professionalizing the academic support structure within Thapar, reviews the impact of the CAPSL programme, and considers the role of industry as an academic partner. The Report then focuses more closely on academic reviews at departmental level. This year, the Trinity team has foregrounded a set of recommendations within each section of the report to provide an executive summary of the conclusions drawn, followed by more in-depth analysis of the subject under consideration. 5 As with previous Academic Review Reports, the findings documented here are based on a series of meetings including plenary, discipline-specific, and management level gatherings, as well as visits to laboratories and new buildings on the Thapar campus. The meetings and visits covered all aspects relevant to the academic mission of Thapar but with particular reference to the overall contemporisation project. Indeed, it could be stated that the overriding goal for this visit was an investigation of the state of contemporisation, where it now stands, and where it is going. The main outcome to be noted from the very outset is that there has been a significant move forwards on contemporisation. We have seen convincing evidence that the project, in overall terms, is gathering momentum, principally because it is underpinned by

- A commitment of resources, both current and future;
- The development of an increasing number of strands to the project;
- Evidence of strategic thinking in how the strands are linked together.

As in previous such documents, this Report will note where distinct progress has been made, but also where the Review Team believes there is further work to be carried out. Specific recommendations are made as appropriate.

Among the progressions to contemporisation observed, the following are particularly noted:

• A significantly developed version of an institutional Strategic Plan with refinements to the vision and aspects of the Plan extending to beyond the customary 5-year window for such statements.

• Diversification of academic activity into other disciplines such as law, psychology, architecture, and pharmacy.

• The outline of an ambitious research Plan based on a number of specific themes and linked to Research Centres. These Research Centres will in turn be linked to international partners and underpinned by funded professorial positions.

• Continued major progress on the physical infrastructure. Three new accommodation blocks are already on stream and later this year the teaching & learning building will open followed by the Computer Science and Engineering building and the new library. The architectural integration of these buildings forms an impressive sight.

• Among the commendable student oriented initiatives reported, the following were prominent: - Venture Labs, including plans for a new purpose-built venture laboratory building;

- Experiential Learning activities which in turn are very close in concept to project-based learning activities which we have previously advocated;

- The embedding of the Innovation module for all engineering students;
- The initiative with Tata Motors in support of master's degree projects in Mechanical Engineering.

Significant progress can also be recorded in respect of CAPSL-related activities under the banner of the New Directions programme. Two batches of academic staff have completed the foundation programme with a third batch commenced. A team of five teaching fellows drawn from the first batch are completing a train-the-trainers programme and will be deployed in further embedding the New Directions gains within Thapar and in building a sustainable CAPSL style base in Thapar. Of course, much further work is required in changing the overall teaching culture towards a "smarter" orientation but, with top-down institutional support complementing the bottom-up achievements to date, a solid environment has been created for producing the desired change in teaching style across the institution. Staying in the CAPSL domain, particular note has been taken of two recurrent issues which arise at the workshops: large group teaching and mapping the CAPSL content into specific technical disciplines. Trinity undertakes to give these issues due attention when devising further CAPSL activities for Thapar staff. Progress can also be reported on the introduction of professional administrative structures. A support group has been put in place to assist the Dean of Contemporisation and Accreditation, Professor Batish, while a suitably qualified graduate has been recruited to provide administrative support for the Department of Computer Science and Engineering. The Review Team looks forward to an assessment of how this appointment impacts on the operation of the department.

Annexure II

Operational Document – Implementing Academic Review Findings – Feb 2018 Review

Trinity College, Dublin

Dear Colleagues

An Academic Review of four engineering departments at Thapar Institute was completed by a team of experts from Trinity College Dublin during the February 2018. A detailed report about the findings of the review was received on in June. The 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 implementing an action plan, this operational document is the first step listing a broad implementation plan for effecting the necessary changes.

The operational document has action points for each department and other functions and would require a sustained effort from all of us to achieve the goals of the Contemporization programme. To begin with, we need to document the broad recommended actions for each action point. I request your support in filling up this action plan by July 22, 2018.

(Ajay Batish)

ACTION PLAN - Academic Review of four departments (Computer Science and Engineering)

Recommendation 1	Appoint an academic leader for large courses with multiple lecturers. The Academic Leader should be an expert in the area, with devolved responsibility for course design, teaching and assessment methods, examination, return of results and performance monitoring. Academic leaders should be appointed to courses for an extended period (e.g. three or more years) to encourage continuous improvement of courses. Furthermore, the Academic Leader of a course should have increased freedom to tailor the module to suit the needs of students, introduce more project work and move towards a mode with increased self-directed learning. Where appropriate, the Academic Leader should develop shared teaching materials to be used by all faculty involved in the teaching of the module.

Action(s) taken	**Responsibility**	**Target Date**
1. Meeting of all faculty taking multiple section courses was called and a course coordinator for every course was appointed for three years. All the coordinators are advised to: (a) Assess the teaching and assessment methods for their course (b) Plan a strategy that introduces more project work either in the Practical sessions or as independent assignments (c) Plan a performance monitoring strategy for all the groups/sections of the course (d) Design Course portal so as to share all the teaching materials to be used by all faculty involved in the teaching of the module (e) Review leading universities/Institutes for the course contents and delivery methods of the respective courses so as to introduce the same (if valuable) during next course revision List of the courses and their course details along with the list of open ended projects has been provided in **Annexure A: List of courses and course details**	Course Coordinator	July 2018

Recommendation 2	Reduce timetabled contact hours and the amount of material taught within courses. Increase the emphasis on project work and self-directed learning outside the classroom and in the laboratory sessions. In conjunction with an increased emphasis on project work and learning outside the classroom, there should be a corresponding reduction in contact hours in lectures and, where appropriate, tutorials and labs.

Action(s) taken	**Responsibility**	**Target Date**
(a) As per the new scheme contact hours have been reduced and self-effort hours have been introduced (b) Auto-evaluation software is being procured, which can give multi-fold benefits: reduce faculty workload, increase transparency, expose students to the latest questions and format as per industry standards. The purchase of auto-evaluation software has been initiated after requisite approvals. Purchase order is signed by competent authority and released to the vendor. **Following is the detail of schemes:**	Board of Studies, HCSED HCSED	Changes made in the new scheme from 2018 admissions Purchase process is on, expected to start utilizin

	OLD	**NEW**	**CHAN**

							GE		g it by Sep, 2018
Academic Year	**Semester**	**Subject**	**Contact hours per week**	**Academic Year**	**Semester**	**Contact hours per week**	**Reduction in contact hours**		
2016-17	III	UCS310 Database Management System & UCS406 Data Structures Algorithm shifted to 4th Semester	34	2017-18	III	31	3		
2015-16	IV	UCS407 Invention & Innovation in Computing shifted to 3rd semester	33	2016-17	IV	32	1		
2016-17	VI	Capstone Project	24.5	2017-18	VI	22.5	2		
2016-17	VII	Capstone Project	24	2017-18	VII	22	2		

<table>
<tr><td>Recommendation 3</td><td colspan="3">TCD feels that there is scope for project work to be used across more modules in the curriculum. Where practical, project work should be independent.
Some elements of projects should be "open ended" to encourage student innovation and independent thinking. It will help to differentiate the strongest students. It is suggested that, where appropriate, a minimum of 10% to 20% of the marks available for projects should be reserved for open-ended elements.</td></tr>
<tr><td colspan="2"><u>Action(s) taken</u>
(a) Coordinators have been advised to introduce more project work in the Practical sessions and give open ended problems to students to encourage student innovation and independent thinking
(b) The Project assessment should also be devised to offer 10% marks for open ended solutions, once exercised & reviewed, these marks can be altered.

Details provided in Annexure A: List of courses and course details</td><td><u>Responsibility</u>

Course Coordinator</td><td><u>Target Date</u>

Dec 2018</td></tr>
<tr><td>Recommendation 4</td><td colspan="3">The use of plagiarism detection tools such as Turn tin is strongly encouraged in continuous assessment and project work across all modules.</td></tr>
<tr><td colspan="2"><u>Action(s) taken</u>

In the Project work like Capstone Project, Plagiarism report is being submitted by the students. On similar grounds, course coordinators are advised to introduce the practice in their respective lab works.
Students would also be educated and encouraged to use tools like Turntin. Masters students have been apprised of the plagiarism tool and a report is submitted by them in the thesis and details of the mail sent to students as well as the faculty are provided as Annexure C</td><td><u>Responsibility</u>

Course Coordinator
UG coordinator</td><td><u>Target Date</u>

Aug 2018</td></tr>
<tr><td>Recommendation 5</td><td colspan="3">In the case of some courses, it appears that the breadth of content covered is not warranted by the credit weighting of the course and this may lead to superficial, rather than in-depth, coverage of topics. We recommend that this be reviewed and, where appropriate, content be delivered over two courses rather than one. (For example, the Computer Networks course in Year 2 could be split into two separate modules, with the Physical, Data Link and Network layers taught in Year 2 and the Transport and Application layers, with a course on Network Security, be taught in Year 3. This will allow greater emphasis on project work in both years, with socket programming and data link simulations in year two, and HTTP and cryptographic libraries used to develop network applications in year three.)</td></tr>
<tr><td colspan="2"><table><tr><th>Elective</th><th>Course Code</th><th>COURSE TITLE</th><th>L</th><th>T</th><th>P</th><th>Credit</th></tr></table>
<u>Action(s) taken</u>
As a core subject: Computer Network @UG level is sufficient, but for students who wish to choose Elective Focus as Information & Cyber security, set of electives have been introduced to give in-depth content coverage.
List of electives for EF: Information and Cyber Security</td><td><u>Responsibility</u>
BoS, HCSED</td><td><u>Target Date</u>
Aug 2018</td></tr>
</table>

I	UCS523	COMPUTER & NETWORK SECURITY	3	0	2	4.0
II	UCS634	SECURE CODING	3	0	2	4.0
III	UCS643	CYBER FORENSICS	3	0	2	4.0
IV	UCS743	ADVANCED COMPUTER NETWORKS	3	0	2	4.0

Recommendation 6	The Information and Cyber Security elective should expose students to topics such as Number Theory, Groups, Finite Fields and Discrete Logs, rather than providing only a textbook knowledge of security.

Action(s) taken	**Responsibility**	**Target Date**
Changes suggested will be taken forward to Board of Studies (BoS) and once approved shall get introduced in the curricula. BoS meeting would be convened in the last week of September 2018.	Associate Head	Dec 2018

Recommendation 7	The sequencing of courses should be reviewed. (For example, consideration should be given to moving the Software Engineering course to Semester 4 or Semester 5, before students begin the Capstone project.)

Action(s) taken	**Responsibility**	**Target Date**
Course of Software Engineering is in Semester 5 in the new scheme for batch of 2017 onwards		

Recommendation 8	For the first appointment of Professional Administrator in CSE, the tasks and responsibilities should be prioritized from the outset and reviewed after six months. This review should be shared with other academic Departments. Additional professional administrative staff will be required to further relieve faculty of non-academic administrative tasks (e.g. filling out purchase orders, recouping travel costs, collation of examination marks). In time, the professional administrators in Departments will develop close links with the central administration in TIET.

Action(s) taken	**Responsibility**	**Target Date**
Review report would be send to HR after six months. **Review report along with timeline is provided as Annexure D**	HCSED	Dec 2018

Recommendation 9	**Implement a career progression path for "lab attendants" and other technical staff, leading to the creation senior technical roles.**		
Action(s) taken Some changes have been proposed by HR, further discussion will result in proper implementation of a career progression for the technical staff. HCSED Career Progression scheme details are with HR, in the new policy framework, technical staff progression has been given due considerations.		Responsibility HCSED, CHRO	Target Date Dec 2018
Recommendation 10	Capstone projects would not currently meet the standards of top-ranked international universities - The capstone projects still lack the research focus required to further elevate the standard being sought by TIET. Shift the focus away from the implementation of prototypes in applied areas towards projects that are more investigative. Place greater emphasis on the inclusion and assessment of design, experimentation and analysis. This guidance should include a breakdown marking of the marking scheme. Furthermore, in the capstone project report, specific requirements should be set out for individual student contributions to the group report and other project elements (e.g. a minimum 6 papers to be reviewed by each student). Finally, prior to the start of the next Capstone project cycle, the marking scheme should be reviewed to determine whether all of the current assessment elements are required, considering the student assessments of the Course Learning Outcomes in particular.		
Action(s) taken Following changes have been introduced in the Capstone Project: (a) Students have been asked to Include the literature survey (at least 6 papers per student in a team of 3-4 students) as well as review of similar systems or projects to emphasis the research focus. (b) Assessment scheme has been updated and marks are allocated for Design assessment, experimentation and overall analysis (c) Marking scheme has been reviewed to include all aspects of student outcomes and more emphasis on group report From the next batch starting in January 2019 the students would be encouraged to work on more investigative projects instead of only application based projects **Documented procedure for all the changes introduced in Capstone Project is provided as ANNEXURE E**		**Responsibility** Capstone Coordinator/ CSED faculty members mentoring Capstone projects	**Target Date** Jan 2019
Recommendation 11	The further development of a research strategy should seek to increase the proportion of staff who are active in research. TCD recommends that, to begin, senior academics in the department reach out to their counterparts in the partner institutions to see where there are research synergies and to get involved in collaborating on projects and papers.		

<table>
<tr><td colspan="2"><u>Action(s) taken</u>

Department already has active research groups. A meeting of all the research groups would be called to further synergise their research activities
Research strategy of the department along with the details of research groups and research active staff is provided as Annexure B</td><td><u>Responsibility</u>

HCSED, AHCSED, research group leads</td><td><u>Target Date</u>

Dec 2018</td></tr>
<tr><td>Recommendation 12</td><td colspan="3">More substantial links with industry should be developed to strengthen research and teaching activities in CSE. In particular, the Department should actively seek opportunities for industry-funded research, even on a small scale (e.g. PhD studentships).</td></tr>
<tr><td colspan="2"><u>Action(s) taken</u>
The Industry Attachment Program (IAP) coordinator has been asked to devise a strategy to meet target industry that can offer research funding and to strengthen research and teaching activities in CSE

Already department is working with TCS and since last 4 years good number of PhD project funding has been received.

Further strategy for raising industry-funded research incorporates following action plans:
Faculty from CSE department visits twice during the project semester every year to take follow up from the 4th Yr student as well as their respective industrial mentor/s. Scope of getting the funds will be explored in forthcoming session (Jan-May 2019), by sending a relevant letter to company representative (either HR Manager or CEO/owner, etc.) through industrial mentors (or sometimes directly through students) to explore the opportunity of research projects and also getting funded for the M.Tech./PhD students.
Companies that are having R&D departments in addition to development section or the software houses that are specifically into R&D will be identified by the end of September 2018, and a formal communication will be executed to settle some MoU related to project funding for M.Tech./PhD candidates.</td><td><u>Responsibility</u>
IAP coordinator/ PhD coordinator/ Individual supervisors</td><td><u>Target Date</u>
Dec 2018</td></tr>
<tr><td>Recommendation 13</td><td colspan="3">Future cohorts that the roles and responsibilities of the visiting postdocs be better defined, and in particular be separated from the teaching function.</td></tr>
</table>

Action(s) taken	**Responsibility**	**Target Date**
From this session onwards the roles and responsibilities of the visiting postdocs have been defined and have been differentiated from the role of attaining course/subject knowledge **Dr. Jhilik Bhattacharya will be working with Dr. Gerard Lacey, Associate Professor** She would be working in Graphics, Vision and Visualisation (GV2) research group. The proposed research project will focus on deep learning approaches to understanding 2D and 3D video sequences of human beings working on bimanual tasks. Specifically, looking at measuring the motions involved in basic medical skills such as suturing, knot tying and hand hygiene. **Dr. H S Pannu will be working with Prof. Khurshid Ahmed, Professor** He will work in the area of fuzzy-logic based anamoly detection systems which involve neural networks as a basis of a learning module. Work of these PDFs will lead to the publication of at least one paper in a good journal and some conference publications.	HCSED	Sep 2018

Recommendation 14	Wi-Fi access and quality on the campus is relatively weak. This should be improved to enhance the environment for both teaching and research.

Action(s) taken	**Responsibility**	**Target Date**
Administrative approval have been taken and Internet bandwidth enhancement is under process. Comparative statement has been made and it is at negotiation state with the Central Store and Purchase department. Current Bandwidth is: 1085 Mbps from Reliance Networks and 1000 Mbps from National Knowledge Network Enhanced Bandwidth approved: 3 Gbps + 1 Gbps	Head CITM	Sep 2018

ANNEXURES- CSED

Annexure A: List of courses and course details

UG First Year	
Course Name:	Computer Programming
Course Coordinator:	Dr. Ravinder Kumar
Website link/course relevant material:	https://sites.google.com/a/thapar.edu/uta-007
Faculty Involved:	Dr. Husanbir Singh Pannu, Dr. Ravinder Kumar, Mr. Vaibhav Agarwal, Dr. Palika Chopra, Dr. Seemu Sharma,Dr. Hemant Kumar Gianey,Dr. Rajendra Kumar Roul,Mr. Ravi Prakash,Mr. Gurpal Singh Chhabra, Dr. Deepshikha Tiwari,Ms. Sonal Kukreja,Ms. Rashmeet Toor,Dr. Nidhi Kalra,Mr. Sahil Sha rma,Dr. Vinod K. Bhalla,Ms. Sukhandeep Kaur,Mr. Shubham Goel,Ms. Kanu Goyal,Dr. Maninder Kaur,Mr. Vijay Prakash,Mr. Aman Sharma,Ms. Muskaan,Mr. Ashish Girdhar,Mr. Arun Kumar,Ms. Rajanpreet Kaur,Ms. Nidhi Lal

UG Second Year	
Course Name:	UCS520: Computer Networks
Course Coordinator:	Dr. Sangita Roy
Website link/course relevant material:	https://sites.google.com/a/thapar.edu/ucs520/home
Faculty Involved:	Dr. Sharad Saxena, Dr. Sangita Roy, Ms. Swati Kumari, Ms. Rashmi Chaudhary, Mr. Antriksh Goswami, Ms. Shivani Sharma

Course Name:	UCS405: Discrete Mathematical Structures
Course Coordinator:	Dr. Manju
Website link/course relevant material:	https://sites.google.com/a/thapar.edu/ucs-405/home
Faculty Involved:	Dr. Manju, Dr. Smita Agrawal, Mr. Ashish Girdhar, Mr. Shatrughan Modi, Ms. Urvashi

Course Name:	UCS303: Operating Systems
Course Coordinator:	Dr. Vijay Kumar
Website link/course relevant material:	https://sites.google.com/a/thapar.edu/operating-systems/home
Faculty Involved:	Dr. Vijay Kumar, Dr. Shailendra Tiwari, Dr. Raman Kumar Goyal, Dr. Avleen Kaur Malhi, Dr. Tarunpreet Bhatia, Ms. Rajanpreet Kaur, Ms. Navneet Kaur Kaleka, Mr. Amritpal Singh

Course Name:	UCS407: Inventions & Innovations in Computing
Course Coordinator:	Dr. Deepshikha Tiwari
Website link/course relevant material:	https://classroom.google.com/c/MTQ5MjUzODAxNjda
Faculty Involved:	Dr. Deepshikha Tiwari, Ms. Nidhi Lal

Course Name:	UTA014: Engineering Design Project-II (Buggy)
Course Coordinator:	Dr. Ashutosh Mishra
Website link/course relevant material:	https://sites.google.com/thapar.edu/buggy/home
Open ended projects:	Lab Evaluation-1 (ECE): [20] Lab Evaluation-2 (CSE): [20] (individual lab ECE [20] and CSE [20]) 1. Lab experiment [8] 2. Viva [5] + Day-to-day performance [3] 3. Mid-term Report (ECE or CSE) [4] Quiz: [10] (ECE+CSE) Lab Evaluation-3 (ECE+CSE): [50] 1. Challenges (Bronze, Silver, Gold) [15+15] 2. Viva [10] 3. Final Report (ECE + CSE) [5] 4. Day-to-day performance [5]
Faculty Involved:	Dr. Ashutosh Mishra, Dr. Raman Singh

Course Name:	UCS310: Database Management System
Course Coordinator:	Dr. Parteek Bhatia
Website link/course relevant material:	http://172.31.5.21:7779/~parteek/index_files/Page356.htm

Open ended projects:

1	ONLINE RETAIL MARKET	34	SMS
2	PAYROLL MANAGEMENT	35	VESTIR
3	HOSPITAL MANAGEMENT SYSTEM	36	E-COMMERCE(SHOOPING)
4	PLACEMENT RECORD AUTOMATION SYSTEM	37	INSURANCE AGENCY MANAGEMENT
5	SANITARY SHOP MANAGEMENT SYSTEM	38	EXAMINATION MANAGEMENT SYSTEM
6	HOSTEL MESS MANAGEMENT	39	BANK MANAGEMENT
7	CRIMINAL RECORD SYSTEM	40	DISPENSARY MANAGEMENT SYSTEM
8	RETAIL STORE MANAGEMENT SYSTEM	41	LAUNDRY SYSTEM
9	FOOTBALL CLUB MANAGEMENT SYSTEM	42	LEAVE ENTRY SYSTEM
10	FACULTY SEARCH SYSTEM	43	SPORTS TOURNAMENT
11	ELECTRICITY BILLING MANAGEMENT	44	HOSTEL MANAGEMENT
12	BOOK EXCHANGE STORE	45	AIRPORT MANAGEMENT SYSTEM
13	ONLINE SHOPING	46	CLINIC MANAGEMENT
14	VILLAGE DESIGN	47	INVENTORY MANAGEMENT

				OF CONSTRUCTION
	15	EXAMINATION MANAGEMENT	48	CAR RENTAL MANAGEMENT
	16	LIBRARY MANAGEMENT SYSTEM	49	HEALTH CARE PROVIDER DATABASE
	17	ONLINE HOSTEL ALLOCATION PORTAL	50	ELECTRONICS STORE
	18	HOSPITAL MANAGEMENT	51	RAILWAY MANAGEMENT SYSTEM
	19	TRAVEL AGENCY	52	CLINIC MANAGEMENT
	20	CAR POOLING SYSTEM	53	PROJECT DATA SHARING IN DC++
	21	ONLINE SHOPPING MANAGEMENT SYSTEM	54	LEAVE ENTRY MANAGEMENT
	22	BIBLIOTECH	55	SALARY MANAGEMENT
	23	MESS MANAGEMENT SYSTEM	56	RESTAURAUNT MANAGEMENT
	24	AIRLINE MANAGEMENT	57	HOTEL MANAGEMENT
	25	HOTEL MANAGEMENT	58	RETAIL SHOP MANAGEMENT
	26	QUIZ GAME	59	AIRPORT MANAGEMENT
	27	DATABASE OF EMPLOYEE	60	INDUSTRIAL MANAGEMENT
	28	HOSPITAL MANAGEMENT	61	INDIAN DEFENSE MANAGEMENT
	29	CLUB FACILITIES	62	SPORTS ACADEMY MANAGEMENT
	30	BANKING SYSTEM	63	LAUNDRY SERVICE MANAGEMENT
	31	HOSPITAL MANAGEMENT	64	ONLINE RETAIL MANAGEMENT
	32	ONLINE RAILWAYS RESERVATION SYSTEM	65	EXAM MANAGEMENT
	33	LIBRARY MANAGEMENT SYSTEM	66	PHRMACEUTICAL MANAGEMENT
Faculty Involved:	Dr. Parteek Bhatia, Dr. Geeta Kasana, Dr. Avleen Kaur Malhi, Ms. Anika, Dr. Santosh Rathore			

UG Third Year	
Course Name:	UCS616 -- Advanced Data Structures and Algorithms
Course Coordinator:	Dr. Rajiv Kumar
Website link/course relevant material:	https://sites.google.com/thapar.edu/ucs-616
Faculty Involved:	Dr. Rajesh Mehta, Dr. Rajiv Kumar, Dr. Shreelekha Pandey, Ms. Anika
Suggestions (if any):	Data structures and DAA is combined in UCS406 so students are not able to grasp the subject fully as these are two full-fledged subjects. ADS can be combined with Data Structures.

<table>
<tr><td>Course Name:</td><td>UCS503 -- Software Engineering</td></tr>
<tr><td>Course Coordinator:</td><td>Ms. Ashima</td></tr>
<tr><td>Website link/course relevant material:</td><td>https://goo.gl/5rHyTS</td></tr>
<tr><td>Open ended projects:</td><td>Yes (projects related to applied software engineering using current technologies like Android, Machine Learning etc.)
<u>Evaluation scheme:</u>
Allocated Marks: 20
Evaluation I before MST: 10 Marks *
Evaluation II before EST: 10 Marks**
Criteria:
• Students are asked to fill the Software Bid in which they have to give names of four projects they are interested to develop.
• An appropriate project based on current technologies, trends and research is allocated to the team (having 3 to 4 members) after discussion.

*Evaluation I is based on Problem as well as Requirement Analysis and Prototyping that is Preliminary design and GUI Design of the allocated project.
**Evaluation II is based on detailed designing (UML Diagrams), Implementation, Testing and Deployment of the allocated project.
<table>
<tr><td>1</td><td>Soft note</td><td>21</td><td>Emotion Recognition</td></tr>
<tr><td>2</td><td>Hostel Grievance System</td><td>22</td><td>Automatic Attendance System</td></tr>
<tr><td>3</td><td>Canteen Automation System</td><td>23</td><td>Delta Star</td></tr>
<tr><td>4</td><td>Blood Book</td><td>24</td><td>Online Ticket Booking System</td></tr>
<tr><td>5</td><td>Event Management Service</td><td>25</td><td>Black Box Office</td></tr>
<tr><td>6</td><td>Speech Recognition System</td><td>26</td><td>Music Recommendation System</td></tr>
<tr><td>7</td><td>PG Study</td><td>27</td><td>Vehicle Speed Detection</td></tr>
</table></td></tr>
</table>

	8	Placement Notification App	28	Fingerprint Based ATM
	9	Event Notification App	29	Proximity App
	10	Classroom Simplified	30	Traffic Management System
	11	Digisamadhan	31	Calorie Counter
	12	Reel To Roll	32	Attendance Through Face Recognition
	13	Load Balancer	33	Systematic Parking Platform
	14	Fitness Freaks	34	News App
	15	Legal Diary	35	Syllabus Tracker
	16	Go Diet- Stay Fit	36	Smart Elevator
	17	Wiz Hackers	37	Gesture Recognition
	18	The Invicibles	38	Motion Object Detection and Personnel
	19	AI Squad	39	Registering for Restricted areas
	20	Side-Kick		
Faculty Involved:	Dr. Sanmeet Bhatia, Ms. Ashima, Dr.Vinay Arora			
Course Name:	UCS519/ UCS507 --Computer Architecture and Organization			
Course Coordinator:	Dr. Anju Bala/Dr. Rupali			
Website link/course relevant material:	https://sites.google.com/thapar.edu/ucs-507/home			
Faculty Involved:	Dr. Rupali Bhardwaj, Dr. Anju Bala, Dr. Anjali Anand, Ms. Urvashi			
Suggestions (if any):	Some advanced architectures should be added in theory.			

Course Name:	UCS701-- Theory of Computation
Course Coordinator:	Dr. Ajay Kumar
Website link/course relevant material:	https://sites.google.com/a/thapar.edu/ucs-701/
Faculty Involved:	Dr. Ajay Kumar, Dr. Nidhi Kalra, Mr. Nitin Saxena, Mr. Rohit Ahuja
Suggestions (if any):	Some advanced topics related to automata on infinity string, game theory and logic can be proposed as an elective subject.

Course Name:	UCS521 -- Artificial Intelligence
Course Coordinator:	Mr. Jasmeet Singh
Website link/course relevant material:	https://sites.google.com/a/thapar.edu/artificial-intelligence/

Open ended projects:	Expert system development using PROLOG
Faculty Involved:	Mr. Harpreet Singh, M. Sukhnandan Kaur, Mr. Jasmeet Singh, Ms. Rashmi Chaudhry, PLI
Suggestions (if any):	There should be lab component for this subject

Course Name:	UCS525 -- Professional Practices
Course Coordinator:	Ms. Rajanpreet Kaur
Website link/course relevant material:	https://sites.google.com/a/thapar.edu/ucs525/
Faculty Involved:	Ms. Rajanpreet Kaur

Course Name:	UCS608 --- Parallel and Distributed Computing
Course Coordinator:	Ms. Gaganpreet Kaur, Dr. Jhilik
Website link/course relevant material:	https://sites.google.com/a/thapar.edu/ucs608/
Faculty Involved:	Dr. Jhilik
Suggestions (if any):	Syllabus needs to be revised

Course Name:	UCS522 Computer Vision
Course Coordinator:	Dr. Shailendra Tiwari
Website link/course relevant material:	https://sites.google.com/thapar.edu/ucs522/home?authuser=0
Faculty Involved:	Dr. Shailendra Tiwari

Course Name:	UML501 Machine Learning
Course Coordinator:	Dr. Parteek Bhatia
Website link/course relevant material:	https://www.coursesites.com/
Open ended projects:	Yes Evaluation scheme • Project: 8 Marks • Every Student has been asked to work on Machine Learning Project in a group of 2 to 3 students, preferably in Python. • It will be evaluated on the basis of Problem Formulation, Data Collection, Data Pre Processing, Building the Model, Discussion and Analysis of Results.
Faculty Involved:	Dr. Parteek Bhatia, Dr. Singara Singh, Dr. Maninder Kaur
Suggestions (if any):	Syllabus needs to be updated

Course Name:	UCS614- Embedded Systems Design
Course Coordinator:	Ms. Gaganpreet Kaur
Website link/course relevant material:	https://sites.google.com/a/thapar.edu/ucs614/
Faculty Involved:	Ms. Gaganpreet Kaur

Course Name:	UCS617 Microprocessors and its applications
Course Coordinator:	Mr. Harpreet Singh
Website link/course relevant material:	https://sites.google.com/a/thapar.edu/microprocessor---soul-of-industrial-revolution/
Faculty Involved:	Mr. Harpreet Singh

UG Fourth Year	
Course Name:	UCS802: Compiler Construction
Course Coordinator:	Dr. Karun Verma
Website link/course relevant material:	https://sites.google.com/view/ucs802/home (bit.ly/ucs-802)
Open ended projects:	Lab1: Programming Context free Grammars using LEX and YACC Lab2: Project on creating SLR parser for a given Context Free Grammar
Faculty Involved:	Dr. Karun Verma, Mr. Sugandhi, Dr. Ashutosh Aggarwal, Dr. Geeta Kasana

Elective-IV

Course Name:	UCS709: Advanced Topics in Software Engineering
Course Coordinator:	Ms. Harkiran Kaur
Website link/course relevant material:	https://sites.google.com/site/ucs709atse/?pli=1
Open ended projects:	Software Project is developed by student teams using Semi Formal Methods and Clean Room Software Engineering Lab Evaluation-1 : [10], 1. Software Project Plan, DFD, SRS, Test Case Development, Use Case Diagram [10], Lab Evaluation-2 : [10], 1. Class Diagram, GUI, Coding, ER Diagram, Cyclomatic Complexity, Test Report [10]
Faculty Involved:	Ms. Harkiran Kaur

Course Name:	UCG731: Game Design & Development
Course Coordinator:	Dr. Shivendra Shivani
Website link/course relevant material:	https://sites.google.com/thapar.edu/ucg731/home
Open ended projects:	Interactive Windows or Android Games based on AR/VR/AI
Faculty Involved:	Dr. Shivendra Shivani

Course Name:	UCS742: Deep Learning
Course Coordinator:	Dr. Sushma Jain
Website link/course relevant material:	https://drive.google.com/drive/folders/1-lYEhITq_hDM64IFa7DP7h9zaHHNRv1R?ogsrc=32
Faculty Involved:	Dr. Sushma Jain, Dr. Prashant S. Rana

Course Name:	UCS743: Advanced Computer Networks
Course Coordinator:	Mr. Sumit Miglani
Website link/course relevant material:	https://sites.google.com/a/thapar.edu/ucs-743_2018/home
Faculty Involved:	Mr. Sumit Miglani

Course Name:	UCS704: Compiler Construction
Course Coordinator:	Dr. Karun Verma
Website link/course relevant material:	https://sites.google.com/view/ucs802/home (bit.ly/ucs-802)
Faculty Involved:	Dr. Sunita Garhwal
Course Name:	UCS710: Agile Software Development Approaches
Course Coordinator:	Dr. Vineeta Bassi
Website link/course relevant material:	https://sites.google.com/a/thapar.edu/agile/
Faculty Involved:	Dr. Vineeta Bassi, Ms. Navneet Kaur
Course Name:	UCS741: SIMULATION & MODELLING
Course Coordinator:	Dr. Anil Kumar Verma
Website link/course relevant material:	http://bit.ly/AKV_SandM
Faculty Involved:	Dr. Anil Kumar Verma

Annexure B: Research Strategy of CSED

The department of CSED is actively engaged in research activities on the cutting edge technologies leading to the published work at top level conferences and journals across the globe.

Following activities are proposed or identified for interaction of faculties and students with the peer members of the department and the outside world to enhance research environment in the department.

- To plan, coordinate and lead the research activities in accordance with the vision and mission of the department and university through a research team and a group of staff involved in research.
- To be the leader in innovative research proposals submission for financial support.
- To obtain and sustain research funding by involving various stakeholders such as academia (research groups, inter-departmental collaborations, foreign universities) and leading industries.
- To sustain an extensive track record of published research findings in high quality journals, or other media and at internationally recognised conferences.
- To promote shared responsibility, the ethical conduct of research and compliance by teaching, training and supervising students (including research students).

Following are the details of faculty along with their research areas and the current activities being carried out.

Faculty Name	Research Area	Current Activities
Dr. R.K Sharma	Machine Learning, Statistical Methods in Computer Science and NLP	Refer research group "Language Technologies and Machine Learning (LTMR)"
Dr. Seema Bawa	Cloud Computing, Big Data Analytics and Machine Learning	Refer research group "Fuzzy Based Big Data Analytics (FBDA)"
Dr. Rajesh Kumar	Computer Network, Cloud Computing, Software Engineering	Refer research group "Language Technologies and Machine Learning (LTMR)" and "Pervasive and Adaptive Systems (PAAS)"
Dr. Inderveer Chana	Cloud Computing, Big Data and IoT; Software Engineering and Software Project Management.	Refer research group "Cloud and Software Systems Engineering (CSSE)"
Dr. Maninder Singh	Network Security, Software Engineering, Parallel and Distributed Computing	Refer research group "Digital Forensics Investigation Centre (DFIC)"
Dr. A.K Verma	Computer Networks / Security / Mobile & Wireless Networks	Refer research group "Mobile Computing and Communication (MC2)"
Dr. Parteek Bhatia	NLP, Machine Learning and Human Computer Interface for Education of Hearing Impaired People	Refer research group "Language Technologies and Machine Learning (LTMR)"
Dr. Rinkle Rani	Big Data Mining & Analysis with main emphasis on NoSQL Databases, Algorithms	Currently working in the area of IoT
Dr. Shalini Batra	Big data analytics with special emphasis on Probabilistic Data Structures including Bloom filters, Locality	Currently focussing on IoT and Machine learning.

	Sensitive Hashing, etc.	
Dr. V.P. Singh	Computing, Computer Networks, Computer Forensics and Cyber Law	Refer research group "Digital Forensics Investigation Centre (DFIC)"
Dr. Rajiv Kumar	Image Processing, Algorithms (Design and Analysis), NLP, Pattern Recognition, Segmentation	Currently working on Haze Detection and Energy Efficient Sensor Networks.
Dr. Singara Singh	Digital Image Processing, Information Security	Refer research group "Language Technologies and Machine Learning (LTMR)"
Dr. Ajay Kumar	Theoretical Computer Science and Software Testing	Currently working in the area of Quantum computing and Automata Theory.
Dr. Sharad Saxena	Wireless Sensor Networks, IoT, Ad-Hoc Networks	Refer research group "Pervasive and Adaptive Systems (PAAS)"

In addition to individual research activities department faculty are also involved in several research groups. The details for the same as follows:

Fuzzy Based Big Data Analytics (FBDA)

Theme: Big data has become one of the emergent topics when learning from data is involved. The exponential growth of data has directed the attention towards the obtaining of effective models that are able to analyse and extract knowledge from these huge data sources. However, the vast amount of data, the variety of the sources and the need for an immediate intelligent response pose a critical challenge to traditional learning algorithms. When Big Data is concerned then there is a need to scale up traditional machine learning algorithms. Fuzzy and big data clustering and classification methods give in general better results than classical methods and even better if merged. They have to be used when classical methods fails are because Fuzzy and big data clustering methods have complex implementation and the use require more computational resources

- **Core faculty members**
  - Dr. Seema Bawa CSED- Group Leader
  - Dr. Amit Kumar SOM
  - Dr. Parshant Rana CSED
  - Dr. Harish Garg SOM
  - Dr. Suneel Singla EIED

Cloud and Software Systems Engineering (CSSE)

Vision: Efficient engineering of scalable solutions targeted towards real and scientific problems and developed from emerging distributed computing paradigms.

Mission: The CSSE Research Group undertakes multi-disciplinary research that enables, promotes and facilitates the amalgamation of Cloud computing, Big Data Analytics and IoT, Software Engineering and related technologies like Autonomic and Green computing for developing application based solutions.

- **Core faculty members**
  - Dr. Inderveer Chana CSED- Group Leader

- Dr. Anju Bala CSED
- Dr. Maninder Kaur CSED
- Dr. Vinay Arora CSED
- Dr. Ashima Singh CSED
- Dr. Sukhpal Singh CSED

- **Inter department collaborators**
  - Dr. Tejo Prakash SEE
  - Dr. S. K. Jain EIED
  - Dr. Rajesh Khanna ECED

- **International collaborators**
  - Prof. Rajkumar Buyya, Director, Clouds Lab, University of Melbourne, Australia
  - Prof. Siobhán Clarke, Director, Future Cities, The Trinity Centre for Smart and Sustainable Cities, Trinity College, Dublin, Ireland

Current research themes
- Cloud Workflows
- Autonomic Cloud Services
- Energy aware Computing

Pervasive and Adaptive Systems (PAAS)

Vision: PAAS envision an environment where all researchers can hold the power to create opportunity for themselves and others working in the area of Pervasive Computing.

Mission:

- To bring together as many individuals and groups in an open collaborative manner.
- To develop significant and state of the art techniques in the area related to Networking, Cloud Computing, and Internet-of-Things.
- To enhance services in important domains such as agriculture, medicine, transportation, and communication.

- **Core faculty members**
  - Dr. Rajesh Kumar, CSED- Group Leader
  - Dr. Sharad Saxena, CSED
  - Dr. Anju Sharma, Department of Computer Applications, GZSCET, Maharaja Ranjit Singh State Technical University, Bathinda
  - Dr. Vishal Sharma, Research Assistant Professor, Industry-Academia Cooperation Foundation, Department of Information Security Engineering, Soonchunhyang University, South Korea

Mobile Computing and Communication (MC2)

Research strategy/vision/mission: The group aims in contributing to – Mobile Networks (MANETs, VANETs, FANETs), Sensor Networks, Mobile Cloud Computing in the key areas of routing and security using cryptography, social networking and machine learning mechanisms.

- **Core faculty members**
  - Dr. A. K. Verma, CSED -Group Leader

Language Technologies and Machine Learning (LTMR)

Research Strategy:

To carry out frontier research in the field of Machine Learning and also in Language Technologies, focusing on Human-Computer interface.

- Core faculty member
  - R. K. Sharma
  - Parteek Bhatia
  - Ravinder Kumar
  - Palika Chopra
  - Singara Singh
  - V. P. singh
  - Rajesh Kumar
  - Sanmeet Bhatia
  - Prashant Singh Rana
  - Saurabh Bhardwaj
  - M. D. Singh
  - Nitin Narang
- Synergy with Partners/Collaborators
  - Active Collaboration with Data Science, India, for imparting hands-on training on Machine Learning and associated tools to develop skills in graduating engineering students of TIET.
- Activities in the last 2 years
  - 34 SCI/SCIE publications and 9 conference publications.
- The group has handled 6 projects in the last 5 years.
- Other Activities
  - Seminar on "Modeling of feature space for pattern recognition" by Prof A G Ramakrishnan, IISc Bengaluru.
  - One day workshop on April, 22, 2018 on "Machine Learning and IOT at scale with Google Cloud".
  - One day hands-on training to 1st and 2nd year students on using convolutional neural networks for digit recognition.

Digital Forensics Investigation Centre (DFIC)

Group Members:

Dr. Maninder Singh, Group Lead

Dr. V. P. Singh

Dr. Raman Singh

Dr. Sanmeet Bhatia

Dr. Jhilik Bhattacharya

Mr. Gupal Singh

Annexure C : (Sample email to master students by PG Coordinator).

Dear All,

Your ME thesis viva is to be held on 22nd -Aug-2018 at 10:00 AM in HCSED room. You all need to report 1-hour before the schedule time. Kindly, find the guidelines for the PPT presentation and other information for ME thesis defending.

PPT must contain 20-slides as per the following parameters:

Sno.	Page	Attributes	No. of Slide
1.	Title Page	Thesis title, Student name, Roll no. Supervisor Name	01
2.	Introduction of the topic and Literature Survey	-	05
3.	Objective and Problem Statement	-	01
4.	Work done	Including result analysis, tools, techniques and algorithms etc.	08
5.	Contribution to society or Research	-	01
6.	Conclusion and Future scope	-	01
7.	Publications and placement	-	01
8.	References	-	01

Kindly, bring your hard copy of -

a) Plagiarism Report,
b) Publication Paper,
c) Paper Acceptance Email,
d) Regn. Slip or Presentation Certificate of the Conference,
e) Thesis

1.Your Final Defence may be postponed or withheld if any of the above documents are not made available to the respective PG-CSE Coordinator at least one day before the Presentation.
2.Softcopy of ppt, thesis pdf, plagiarism need to be email to thesis.mecse2018@gmail.com
3.Time allotted for presentation is 20min. to each candidate.

E-Mail to faculty

Ashutosh Mishra <ashutosh.mishra@thapar.edu> 23 July 2018 at 17:33

To: csed_faculty <csed_faculty@thapar.edu>

Dear Faculty Members,

Kindly check the plagiarism report of the student's thesis before submission for the dissertation.

Thanks & Best Regards,
Ashutosh Mishra, PhD

Assistant Professor,
(PG-Coordinator)
Computer Science and Engineering Department
Thapar Institute of Engineering and Technology
(Deemed to be University)
Patiala-147004
91-8437810985

Annexure D

Review: Mr. Ashish Rishi, Professional Administrator CSED

Goals for next Quarter Jul - Sep 2019

SN	Goals	Measures	Time Line
1	Dashboard creations: Faculty research publications, courses attended, training, conferences, FDPs, foreign visits, books, awards & honours, patents etc.	Various type of charts should be showcased, data analytics should give insights into the growth parameters of each individual	Dec 2018 pilot run. Jan 2019 fully configured and deployed
2	Student placement record and CSED alumni contact database.	Factual real world coordinates of alumni giving insights like: Top 10 alumni members in Product engineering companies, Top 10 alumni members in Higher education institutes etc.	March 2019
3	Maintain all records, create digital repository of old records, MoMs etc.	Ease of accessibility and structure	Dec 2018
4	Comparative analysis of Admission Scenarios in PG across country, specifically in Northern India.	Reports giving insight into admission processes across TIET peer institutes	March 2019
5	SWOT analysis of CSED UG, PG and PhD programs	Final reports	Aug 2019

Development Plan for July 2018 - June 2109

SN	Plan
1	Digital Office Practices
2	Improve Your English Communication Skills Specialization: MOOC @Coursera, Georgia Institute of Technolog

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ANNEXURE E

Documented Procedure for Capstone Project

Following changes have been introduced in the Capstone Project:

(a) Students have been asked to include the literature survey (at least 6 papers per student in a team of 3-4 students) as well as review of similar systems or projects to emphasis the research focus.

The capstone report template has been shared with students and faculty on the capstone website. Please refer https://sites.google.com/a/thapar.edu/csedcapstone/project-updates/technicalreporttemplateforfinalsubmissionnov2018 . A mail has also been looped sharing the information regarding Capstone report template with students and faculty. The section 2.1.3 Research Findings for Existing Literature in the report focuses on reviewing the research related to similar systems and projects, each student in the team has been instructed to study and explore at least six research papers related to their project. They are required to examine different research papers while documenting its findings, tools and techniques applied by various researchers. A sample Table 2.1.3 is given under section 2.1.3 Research Findings for Existing Literature in the report which incorporates details of the research paper studied by individual student. The sample Table 1 (or Table 2.1.3 numbered as in report) taken from the report is also shown below.

Table 1 (or Table 2.1.3) Sample Table for Literature Survey

S. No.	Roll Number	Name	Paper Title	Tools/ Technology	Findings	Citation
1	Team member 1		Paper Title 1			
2	Team member 1		Paper Title 2			
3	Team member 1		Paper Title 3			
4	Team member 1		Paper Title 4			

(b) Assessment scheme has been updated and marks are allocated for Design assessment, experimentation and overall analysis

Assessment scheme has been updated and marks are also allocated to design, experimentation, result analysis and discussion. Second panel evaluation carries 50 marks. Second panel evaluation is based on capstone presentation which will include assessment on the basis of six evaluation parameters. These evaluation parameters with their allocated marks are given in Table 2.

Table 2: Updated assessment scheme

Capstone Presentation - Second Panel Evaluation (50)										
Group : EV1										
Marks may be awarded individually. Keep the total marks of the overall project in one of these categories										
Overall Project: Excellent 50-46, Good:44-38, Average:36-30 (For strict adherence please)										
Group No.	Project	Roll No.	Name	Design(10)	Experimentation (10)	Result Analysis (5)	Presentation (10)	Content (Daily Diary) (5)	Technical Report (10)	Total (50)

(c) Marking scheme has been reviewed to include all aspects of student outcomes and more emphasis on group report

Rubrics have been designed taking into consideration the assessment and marking scheme. The assessment scheme and related rubrics for Capstone project have also been shared with students and faculty on Capstone website(https://sites.google.com/a/thapar.edu/csedcapstone/project-updates/assessmentschemeforcapstoneproject).The objectives for the design and usage of the rubrics are to ensure fair assessment across projects, students and faculty. In this respect, it would be desirable for students and faculty to share a common and clear understanding of a detailed set of scoring guidelines. These guidelines will help the students to channelize their efforts in proper direction. It will also help students to work effectively towards development of a validated product. These rubrics are based on five evaluation parameters of the capstone project such as Group report or Report Section having three subsections (Literature Review, Quality of writing and formatting, and References), Presentation, Design, Experimentation, Result Analysis and Discussion. Rubrics for Capstone Project are detailed in Table 3.

Table 3 Rubrics for Capstone Project

Rubrics	**Level of Achievement**		
	Average	**Good**	**Excellent**
Report Section- Literature Review	Incorrect and unclear rationale or background of the project Inappropriate understanding of associated literature or subject matter Poor critical assessment of the literature and identification of gaps Objectives are not supported by the literature	Correct and clear rationale or background of the project Reflects understanding of associated literature or subject matter Adequate identification of gaps. Objectives are adequately supported by background literature.	Clear, coherent, correct and consistent rationale or background of the project. Demonstrate mastery of associated literature or subject matter Critical assessment of the literature and identification of gaps Objectives are superiorly supported by background literature
Report Section- Quality of writing and formatting	Weak writing style Various grammatical and spelling mistakes Poor organization Poor Formatting	Adequate writing style Some grammatical and spelling mistakes Logical Organization Adequate Formatting	Writing is superior or of publication quality No apparent grammatical and spelling mistakes Excellent Organization Excellent Formatting
Report Section- References	25% of the references are timely and appropriate w.r.t. subject matter References selected below average or poor for the chosen subject (relies on websites or non-peer reviewed sources; outdated; missing key works) In-text and reference list citations are formatted incorrectly or inconsistently	50% of the references are timely and appropriate w.r.t. subject matter References selected are adequate for the chosen subject The majority of in-text and reference list citations are properly cited	75% of the references are timely and appropriate w.r.t subject matter References selected are the best available for the chosen subject All in-text and reference list citations are properly cited
Presentation	Presentation is not comprehensible by the	A good working knowledge of the	Demonstrates a very strong knowledge of the

	audience.	research project Speaks clearly and naturally; makes good eye contact with audience Good use of technology with explanation of its enhancement of aims/goals (if applicable) Answers most questions Presentation is clear for the most part, but not consistently	research project Speaks clearly, naturally and with enthusiasm; makes eye contact with audience Excellent use of technology with explanation of its enhancement of aims/goals (if applicable) Answers questions clearly and succinctly Presentation is consistently clear and logical
Design	Poor design; No exploration of alternative approaches; No attention to effective use of resources. Poor depth of analysis No attention given to alternative design approaches and analysis of their advantages/ disadvantages No comparisons made to select the design approach Design principles not followed properly. Improper architectural design Little consideration for design models High Complexity of the design solution.	Careful consideration of alternative design approaches and their resource requirements Adequate analysis of design trade-offs Some attention to alternative design approaches but not a careful analysis of their advantages/ disadvantages Team picked an approach based on superficial comparisons. Adequate follow-up of design principles Adequate architectural design Adequate attention given for developing design models(UML	Thorough consideration and evaluation of a good set of design approaches Careful analysis of resource requirements of each and the resulting trade-offs. Considerate attention to alternative design approaches with careful analysis of their advantages/ disadvantages Excellent comparisons made to select the design approach and solution. Excellent follow-up of design principles. Excellent architectural design Creation of complete set of design models(UML Models) Low complexity of design

	No considerations to the following aspects: -Health and safety -Environmental - Cultural - Societal	Models) Adequate complexity of design solution. Adequate considerations to the following aspects: -Health and safety -Environmental - Cultural - Societal	solution. Excellent considerations to the following aspects: -Health and safety -Environmental - Cultural - Societal
Experimentation (including resource considerations, testing approach, adherence to standards, etc.)	Experimental Setup or test-bed is ill defined. Data selected but not authenticated. Limited amount of attention to memory and other resource usage; Team has followed a standard (agile/ waterfall/ ...) process but not consistently. Team has put some effort into systematic testing but some bugs remain.	Experimental setup or test-bed is defined but not detailed. Data selected from a valid source but not of appropriate size. Careful attention to memory and other resource usage and how system might scale with increased demand for services. The team adopted and mostly followed a standard process in its work. The team used a systematic approach to testing and the system seems bug-free.	Experimental setup or test-bed is well defined and appropriate detail is given. Data selected from valid source and of appropriate size. Meticulous attention to resource usage and to user interface factors; Has ensured that system can evolve to deal with increased demand for services. Team has consistently followed a standard process in its work. Adopted a suitable testing approach, followed it systematically, and thoroughly tested the system.
Result Analysis and Discussion	Poor summarization of key findings w.r.t. objectives Poor interpretation of results across findings Findings poorly evaluated within the context of the literature (e.g., limited discussion of new literature) Project Limitations are	Adequate summarization of key findings w.r.t. objectives Adequate interpretation of results across findings Findings adequately evaluated within the context of the literature	Complete and consistent summarization of key findings w.r.t. objectives Superior integration and interpretation of results across findings Findings fully evaluated within the context of the literature

	poorly identified. Poor discussion of impact on community, implications and future directions Weak recommendations	Project limitations are adequately identified and described Adequate discussion of impact on community, implications and future directions Adequate recommendations	Project limitations are superiorly identified and described Superior discussion of impact on community, implications and future directions Superior recommendations.

d) Regarding Investigative Projects

In the current session, students are developing application as well as research based projects. Research projects allocated to students fall in one of the following categories based on the investigative techniques used. In the capstone report template, Section 3.1 of Chapter 3 discusses the different investigative techniques which can be followed in the project by the students. This section briefs about the particular investigative technique adopted by the team. This information is shared students and faculty using the capstone report template on the capstone website (Please refer https://sites.google.com/a/thapar.edu/csedcapstone/project-updates/technicalreporttemplateforfinalsubmissionnov2018). A mail has also been looped sharing the information regarding capstone report template with students and faculty. A part of the information regarding investigative techniques is also shown in the Table 4 (Table 3.1 numbered as in capstone report template) below.

Table 4 (or Table 3.1) Sample Investigative Techniques

S. No.	Investigative Projects Techniques	Investigative Techniques Description	Investigative Projects Examples
1	Descriptive	An investigation in which scientific questions are investigated and observations of phenomenon are recorded and catalogued.	Projects based on designing completely new system models, concepts, algorithms etc.
2	Comparative	Investigations where observations are made that compare two objects or phenomenon.	Comparison Based Projects (Algorithm based, System based etc.)
3	Experimental	An organized investigation that includes a control group and is designed to test the hypothesis, includes independent and dependent variables	Machine Learning, Deep Learning or Artificial Intelligence based Projects etc.

From the next batch starting in January 2019, the students would be encouraged to work on more investigative projects instead of only application based projects. To include more investigative projects

- It would be notified in the start of the next session that students are required to choose either investigative projects or other projects having investigations as their main component.
- A section on investigative techniques which can be adopted by the teams has also been included in the capstone report template in Chapter 3. Please refer

https://sites.google.com/a/thapar.edu/csedcapstone/project-updates/technicalreporttemplateforfinalsubmissionnov2018.

- Selection of BE Third year students' Capstone Project would be based on Panel Presentation. The selection panel would be advised to reject the proposal not incorporating any kind of investigative edge.

- Each selection panel should select at least 50% of the investigative projects or projects employing some investigative techniques.

ACTION PLAN - Academic Review of four departments (Civil Engineering)

Recommendation 1	The course learning outcomes (CLO) is being employed to monitor course performance and lecturer performance in the attainment of CLOs. Academic staff in the department expressed concern that the tool is too restrictive and removes scope from individuals to make decisions about, and innovate in, the content, delivery modes and assessment of their courses. This may hamper the organic development of courses over time and impede the development of research-led teaching in the department. It is recommended that the deployment of this tool be eased in the department.		
Action(s) taken *This is a policy decision to be taken at Institute level.*		**Responsibility** DOCA H.C.E.D.	**Target Date** --------
Recommendation2	There are concerns about the technical strength of some of the technicians and their ability to carry out laboratory sessions independently of the lecturing staff. It is recommended that existing technicians be trained to a higher level and that new appointments of technical staff be suitably skilled. Adequately trained technicians, with the assistance of PG students, would then be in a position to run laboratories enabling faculty more time for more focused academic work.		
Action(s) taken It is proposed to organize training programs on conduct of various lab experiments in different labs for the lab staff i.e. Lab Technicians and Lab superidents in the phased manner during the summer and winter vacations. **Further data required: Please provide the details of the training programs. What are these programs and when are these being**		**Responsibility** H.C.E.D.	**Target Date** July 2019

offered? And to whom? The training programs will be organized during the summer and winter vacations for the lab technicians and lab supdtt.		

Recommendation 3	It is recommended that serious consideration be given to the appointment of a new professional administrator in support of the Head of Department and to assist in reducing the administration burden on all faculty in the department.

Action(s) taken	**Responsibility**	**Target Date**
CHRO will be requested for the appointment of the professional administrator once the post of the professional administrator is approved in the department. **Further data required: Provide a copy of the correspondence of the department with CHRO.** CHRO will be requested once department gets communication regarding sanction of post of professional administrator in the department.	H.C.E.D.	**Dec. 2018**

Recommendation 4	Some general concerns remain with regard to the standard of project reports. In general, it is recommended that students should be given specific instruction on project writing so that their project reports at all levels include an explanation of their design/research process and a thorough critical analysis of their results.

Action(s) taken	**Responsibility**	**Target Date**
Coordinator capstone projects will be requested to organize a orientation program for the new faculty and give instructions to the students before the start of the capstone project in next semester **Further data required: When is this session happening? Provide details and also who is doing it? Also, provide a copy of the material that will be shared with the students. (copy of instructions)** Capstone project will be offered in Jan-June 2019, so, sSaid orientation program will be organized by the coordinator capstone project (Dr. Tanuj Chopra) before the start of the same in the first week of second semester.	Coordinator Capstone, HCED	Feb. 2019

Recommendation 5	Inclusion of a work-related research element should be a fundamental part of all internship programmes.		
Action(s) taken The internship programmes are undertaken in the industry and students work on the guidelines of the industry. So, the students who are taking internship in the research labs do include research component in their internship programmes. However, students working in other areas will be encouraged to include the possible research component in respective areas. **Further data required: What is the strategy to do this? How are they going to be encouraged to include work related research element?** In this regards a email has been sent to all students on project semester training wherein they are advised to include research component wherever possible.		**Responsibility** Project semester Coordinator HCED	**Target Date** December 2018
Recommendation 6	It is recommended that a research component should be a fundamental part of the Capstone and ME projects.		
Action(s) taken All ME dissertations thesis are already research based. However, in case of capstone projects, some of the projects were research based conducted in last semester (Jan-July 2018). Coordinator capstone projects will be advised to arrange orientation programme for the students in this regard. So, that they can add research components in every capstone projects. **Further data required: Again when is this happening and who is doing it? Separately both Capstone as well as ME dissertations.** Capstone project will be offered in Jan-June 2019 Sem, so, orientation program will be organized by the coordinator capstone project (Dr. Tanuj Chopra) before the start of the same. As ME dissertations are already research based, so, no such program is required.		**Responsibility** Coordinator Capstone, HCED	**Target Date** Feb 2019
Recommendation 7	Conclusions are merely summaries of the work undertaken during the project and ME Thesis are not critical, incisive or particularly penetrating. Concerns		

	remain about the level of research undertaken in the projects and the quality of the conclusions drawn from the work.		
Action(s) taken All faculty members are advised to ensure that type of research undertaken by the student in dissertations should of good level and after completion of the work they should write conclusions critically. **Further data required: How is this going to done? Mere advisories are not going to work. We need a concrete action plan. If people need to be trained, pl arrange it. Or else, please give a strategy of how will this be ensured?** As the students will be taking up thesis work in next semester so after discussions with Head, Centre for Training and development and Head, SHSS a training session will be organized in the next semester.		**Responsibility** PG Coordinator HCED	**Target Date** **July 2019**
Recommendation 8	The peer evaluation scheme does not appear to be working very well with most students awarding full marks to their colleagues. This system should be reviewed.		
Action(s) taken It is proposed to take review from students for their colleagues in the secret form at the time of viva-voice.		**Responsibility** Coordinator Capstone, HCED	**Target Date** July 2019
Recommendation9	Upon review of several project reports (marked from the high to low end) it appears that the projects have been somewhat overmarked generally. This echoes the findings of last year's report. The introduction of secondary independent marking should be seriously considered. There are similar concerns about the quality of the project reports for ME Thesis.		
Action(s) taken ME thesis are marked by committee consisting of Chairman (outside department), External Examiner (outside Institute) cognate area member (from department) and internal examiner. **Further data required: The thesis is not marked by so many people. The primary responsibility of marking the thesis is with the supervisor. The committee only evaluated based on a presentation by the student. The question of over marking has**		**Responsibility** **DOAA** **HCED**	**Target Date** **Jan. 2019**

not been answered. Please provide a suitable reply to this question. The thesis is evaluated and marked by entire committee. External examiner system can be adopted in capstone or other projects also if approved by competent authorities. W**hen are you going to implement this? What is the action plan and who will be the external examiners?** This will be implemented from next capstone project evaluations**.** External examiner will be invited from Industry.		

Recommendation 10	Many of the ME Thesis projects focused on design elements, standard laboratory testing or a collection of data with little or no research components. There was little evidence of results that could aspire to publication in international journals or conference proceedings. Given that these projects are intended to be submitted at a postgraduate level this deficiency in discernment in the reports is a matter for serious consideration.

Action(s) taken	**Responsibility**	**Target Date**
No ME thesis is design based. All involve research component. In last three years there are approx. 21 publications from ME thesis in various Journals and conferences. Faculty and students will be motivated to publish more papers from ME thesis. **Further remark: Provide a list of this 21 publications and from whose thesis can these be traced back to. If we need to counter an argument, we need to have the necessary data.** List attached	PG Coordinator HCED	---

Recommendation 11	Most of this engagement is focused on consultancy work carried out in the laboratories and student placement and employment. However, there are currently no collaborative research projects with industry, a matter which was raised in previous reports. It is recommended that the department should actively leverage its good links with industry to carry out collaborative research projects with these partners.

Action(s) taken	**Responsibility**	**Target Date**
Process already started. Already department has one industry sponsored research project from NBCC and one more project is submitted to M/s Sika India Ltd., other faculty members are also advised to bring industry sponsored research projects.	All faculty members	July 2019

Further data required: Please provide a strategy document to show the efforts on the ground. This otherwise might look like a one of a kind relationship? Some of our ME/Mtech students are doing their research work in industry, so, it is planned that while faculty members are visiting them, they will meet their industry coordinator and try to come up with some research problem which is of interest to the industry and they are ready to sponsor the same. Similar type of efforts will also be made with companies visiting for consultancy work.	HCED	

Recommendation 12	Investment in technically qualified laboratory technicians is essential if the recent investments in equipment are to be best utilized and exploited for teaching/learning and research.

Action(s) taken	**Responsibility**	**Target Date**
All lab staff is well qualified (01 Ph.D. 01, ME, 03 BE, and 03 Diploma holder). However, training programmes on latest equipment will be organized in the phased manner. **Further data required: Please provide the details of the training programs. What are these programs and when are these being offered? And to whom?** The training programs will be organized during the summer and winter vacations for the lab technicians and lab supdtt.	HCED	July 2019

ACTION PLAN - Academic Review of four departments (Electronics & Communication Engineering)

Recommendation 1	The measurement of the delivery of Course Learning Outcomes should not be used as the only measure of the performance of individual lecturers and should not be given the weight that it has been given.		
Action(s) taken		**Responsibility**	**Target Date**
Concur with the recommendation made regarding measurement of CLOs as performance indicator of individual lecturers. The scope of CLOs may be only limited to working out POs only.		DOAA	With immediate effect.
Recommendation 2	Reduce the number of laboratories being deployed per module in order to focus student effort and reduce the pressure on laboratories in the timetable		
Action(s) taken		**Responsibility**	**Target Date**
Committee of subject specialists will be convened to examine feasibility and scope of reduction of laboratories in a phased manner for different courses run by the department. Subjects of final year BE courses of ECED will be evaluated first followed by other programmes. Further data required: Give the details of the committee and their deliberations until now. Since the target date is not very far, it is hoped that this committee would have already done fair bit of work which can be shared with TCD as ongoing work. Committees have since been convened to examine and assess scope of reduction of lab work of following courses- (a) Soft Computing UEC-722 (b) MOS Circuit Design UEC-609 (c) Signal & Systems UEC-404 (d) Digital Signal Processing UEC-502 (e) Analog Communication Systems UEC-401 (f) Digital Communication SystemsUEC-607 (g) Digital System Design UEC-612		HECED	~~15 Sep 18~~ Extended to Oct 25, 2018

Circulars convening above mentioned committees are attached for information.		

Recommendation 3	Laboratory staff are deployed in a wide range of laboratories. It would be useful to consider their training in a more formal way. Schedule time for them to actually attend a lecture series for which they are involved as lab techs. Also the Department might consider sending lab techs on explicit training programs for toolkits used e.g. Matlab or Xilinx tools and so on.

Action(s) taken	**Responsibility**	**Target Date**
Concur with the recommendations made in academic report. A committee is being convened to assess the formal training requirements and suitable agencies for imparting the same. Consolidated training requirements for lab technicians will be prepared and submitted for approval. Further data required: Provide details of the committee that has been constituted and what have they identified as training requirements of lab staff. Which agencies are being considered for imparting such a training program. What is the schedule for explicit training programs for toolkits used e.g. Matlab or Xilinx tools and so on? A committee has been convened to assess training requirements for technical staff of different laboratories in the department. The committee will also identify agencies for conduct of formal training. Circular ECED/1285/6 dated 10 Aug 2018 is reelevant in this context (Copy attached).	HECED	~~15 Sep 18~~ Extended to Oct 25, 2018

Recommendation 4	At least two administrators are required to aid in the collation of reports and general Departmental administration

Action(s) taken	**Responsibility**	**Target Date**
Concur with the recommendations made by TCD team. Induction of administrators may be taken up after a joint team of representatives from all departments under takes initial study of	HCSED	as decided by HCSED

Library Services at Trinity to assess feasibility of replication of similar model at TIET. HCSED may consider initiating action as suggested at Section 1.3 of the academic report. However in the interim, part manpower for administrative services may be positioned with the departments to facilitate efficient functioning of departments for academic role. Further data required: Provide a copy of the correspondence of the department with CHRO regarding hiring of such staff. This point pertains to a recommendation made by the TCD team and the same has been concurred by this department. Since, positioning of additional manpower as per the recommendations of expert team from TCD is a policy matter, further correspondence on this matter from the department to CHRO can only be initiated after the recommendations are formally accepted and a final decision in this reagrd is promulgated by the higher authorities. Department is awaiting a formal decision in this regard based on which a case can be forwarded to CHRO.	CHRO	--

Recommendation 5	A quick review of only a few reports at both the 2nd year and final year level shows that there is not enough consideration of the design process in the report. The project report is only a statement of what was done and what parts were used. It seems that they need at least one lecture on decent report writing to get this right. At the capstone level, students certainly need to be given explicit time to write reports in this more considered manner. By reducing the number of laboratories per module, it should be possible to include explicit time in the timetable for student project work (either in the lab or in writing) to allow this. For such large class sizes there is the need and opportunity to experiment with automation of teaching infrastructure. Several ideas can be explored with capstone project activity and actually deployed in Thapar as a test bed. It would be fantastic, for instance, to see capstone projects around improvement of the buggy project or automation of marking submitted Matlab assignments.

Action(s) taken	**Responsibility**	**Target Date**
1. A "*Standing Committee for Evaluation of Capstone Projects"* has been formed to evaluate the progress of implementation of project and to review project reports. Projects are reviewed by the committee three times before final submission. Improvement in report writing has already been observed.	HECED	Action taken with on going course correction.

Who are the members of the standing committee and what are the methods they follow to prevent the shortcomings reported? This part of the question has not been answered: At the capstone level, students certainly need to be given explicit time to write reports in this more considered manner. By reducing the number of laboratories per module, it should be possible to include explicit time in the timetable for student project work (either in the lab or in writing) to allow this. Following are the members of the Standing Committee for Evaluation of Capstone projects:- (a) Cmde Anil Kumar Sharma (b) Dr KS Sandha (c) Mrs Manu Bansal (d) Dr Ashutosh Kumar Singh (e) Dr Neeru Jindal (f) Mr Navneet Sharma All capstone projects are first assessed at the time of project intiatiation (6th Semester), where in all capstone project groups are required to present the scope of their projects along with proposed methodology of implementation. During the implementation phase, the projects are guided and evaluated progressively by the mentors. During the 7th semester, the project is reviewed again by the Capstone Evaluation team. Students present all aspects of project implementation, demonstartion and final draft of the report. A copy of the directive for final internal evalaution of “Capstone Projects” is attached for reference. 2. As regards to enhancing design and research based project content, brain storming sessions have been held with mentors/ faculty to evolve projects with sound foundation on design /research. More number of capstone projects to be allocated during year 2019, are likely to comply to this requirement.		Ongoing Activity. Jan/Feb 2019.

Further data required: Provide a copy of the report of the brainstorming session and what was deliberated and what were the recommendations? As mentioned, periodic brainstorming sessions have been conducted in the past for enhancing quality of capstone projects. However, there are no such directives held with the department to maintain record of internal discussions/ brainstorming sessions. Outcomes of such activities, if any, are implemented based on their merit. Incorporation of "Standing Committee on Evaluation of Capstone Projects" is an example of an outcome of such brainstorming sessions.		
Recommendation 6	An increase in travel funds is required for research students to be fully funded to attend at least 2 international conferences during their PhD programme	
Action(s) taken	**Responsibility**	**Target Date**
Concur with the recommendation made by TCD. A firm policy decision may be taken and promulgated. **Further data required: Please provide the department's recommendation and share it with DRSP.** This is a recommendation made by the expert team from TCD and the same has been concurred by the department. The point falls under the purview of DoRSP and suitable policy directives need to be issued in this regard.	DoRSP	--
Recommendation 7	Research students can be assessed once per year and not once per semester. This absorbs time which would be better spent on writing conference papers or actually performing research.	
Action(s) taken	**Responsibility**	**Target Date**
This is a policy matter and may be considered at apex level for		

promulgation of uniform policy at TIET level. **Further data required: Please raise this as a concern and move as an agenda item to the senate research committee immediately. Please provide a copy of the agenda item.** It is reiterated that the subject matter is a policy matter and has already been highlighted by the expert team from TCD as point of concern.	DORSP	---

Recommendation 8	Considered plans should accompany patenting activity.

Action(s) taken	Responsibility	Target Date
Noted for implementation and considered plans will accompany patenting documents. Further data required: Please explicitly provide with what will be done and how will this be ensured? Since patenting of intellectual property can originate from any department with in the institute, it is recommended that this matter is centrally handled by DoRSP.	HECED/ Concerned Faculty Member	Will be decided on case to case basis for patents.

ACTION PLAN - Academic Review of four departments (Mechanical Engineering)

Recommendation 1	The department needs a professional administrator and should be considered after review of the computer science appointment. Otherwise continuing present inefficient practices without review will add to the increasing loads on the senior faculty as change is introduced by the management.

Action(s) taken	**Responsibility**	**Target Date**
Ms. Saloni Aul has joined the department as Management trainee. She has been assigned the responsibilities as enumerated in the job profile of a professional administrator.	HR	-

Recommendation2	Delegation of responsibility to department heads / officers on appropriate matters should be considered in order to facilitate the rapid changes required under contemporisation.		
Action(s) taken		**Responsibility**	**Target Date**
Action needs to be taken at the Institutional level. The department can prepare a list of academic and administrative areas, if required, where delegation is sought. **Further data required: I think this refers primarily to the department on how the delegation of responsibility below the department head should be considered. If there is any plan in mind, please provide details.** 1. The departmental work has been delegated to various committees of faculty and staff members 2. The management trainee (professional administrator), Ms Saloni Aul, has been assigned responsibilities of data and information collection archiving and dissemination		Institute Administration	--
Recommendation 3	The market for master's students will be tested severely over the next period due to the reducing number of "feeder" institutions. The department should develop plans to cope with the expected fall in numbers.		
Action(s) taken		**Responsibility**	**Target Date**
The department had an in house discussion and brain storming on the matter. Following action points were evolved: 1. Improving placements of the current batch by tying up with the industry, 2. Making the students more competent through effective education including special training, preparing better placement brochures. 3. Creating centres of excellence in the department to attract students who would come for doing research leading to ME dissertation in these centres under renowned professors/researchers. 4. Better advertisement of the programme. 5. Revising the curriculum to include more elective courses to suit the requirements of a particular class of industry. 6. Creating a departmental committee for industry interaction and strengthening ME/PhD program. **Further data required: Please list what actions have been taken as this was to be done by Aug 20th. We need details and evidences of actions taken. For example, what is planned for each of the 6 steps written in the action plan.**		HMED and faculty of the department	Initiating all actions before 20th August and continuing

A committee for industry interaction has been constituted with the following membership:

1. Dr. T.P. Singh
2. Dr. S.S. Mallick
3. Dr. Tarun Kumar Bera
4. Dr. Vivek Jain
5. Dr Tarun Nanda
6. Dr. Ashish Singla
7. Dr Ashish Purohit
8. Dr. Amandeep Oberoi

The responsibilities of the committee include:

i) Identify potential industrial organizations to be contacted, initiating dialog and visiting them

ii) Creation of relevant material including departmental presentation/brochures on various UG and PG programmes for using during interaction.

iii) Inviting experts from identified industry and involving them in institutional academic activities.

iv) Taking feedback from industry to improve teaching learning process and implementing in the system.

v) Motivating industry to take students for project semester, final placements and for a special programme on the lines of Tata Motors MOU wherein the organization supports them throughout their studies

vi) Arranging internships for ME students in prestigious industrial organisations.

vii) Interacting with faculty for industry needs to promote consultancy and support establishing Centres of excellence

First meeting of the committee was held at 5.00 p.m. on 27.8.2018 in the seminar room of MED. Minutes of the meeting are annexes at annexure 1.

Actions planned against above six points

1 Improving placements of the current batch by tying up with the industry.

The committee members will shortlist the names of the industries in which the students can be placed, latest by September 15. These industries will then be contacted and visited as convenient to both sides. The visits will start by 15th October and will continue.

2 Making the students more competent through effective education including special training, preparing better placement brochures.

The students will be provided additional inputs as required by industry. These can be related to technical areas line Automotive Design or other areas like six sigma or ERP etc. The areas will be identified and shortlisted by 15th Octomer, discussed with the students and the workshops or special programmes organized in Jan to June semester.

3 Creating centres of excellence in the department to attract students who would come for doing research leading to ME dissertation in these centres under renowned professors/researchers.

A plan of development of three centres of excellence (CoE) is to be prepared ((1) CoE for micro machinery (2) CoE for bulk Solid flow and (3) CoE for Robotics and automation) and a team of faculty in will be formed for each center. (Dr. SSM and team, Dr. VKJ& Dr. TN and Dr. ASL & Dr. TKB). The teams will develop a plan of action latest by 20th of September, 2018.

4 Better advertisement of the programme.

The students will be contacted, and new brochures of each programme will be created. The work will start by 10th September and all new brochures in the soft form should be ready by 15th October. Similarly, a departmental presentation will be created highlighting its achievements, facilities and expertise. The presentation would be ready by 10th September.

5 Revising the curriculum to include more elective courses to suit the requirements of a particular class of industry.

This will come through interactions with the industry. The feedback will be taken in the current semester and then efforts made to

incorporate in the curriculum through the academic bodies of the institute. 6 Creating a departmental committee for industry interaction and strengthening ME/PhD program. The committee has been created		

Recommendation 4	A follow on to Recommendation 3 will be further difficulties in recruiting PhD students. Again targeting scholarships with key partner industries should form a part of any emerging strategy.

Action(s) taken	**Responsibility**	**Target Date**
The strategies listed to enhance the status of PhD program are as follows: 1. Creating centres of excellence in the department to attract students who would come for doing PhD in these centres under renowned professors/researchers. 2. Creating a departmental committee for industry interactions and strengthening PhD programs. 3. Seeking research projects from government and industry from which funding/fellowship can be provided to PhD scholars. **Further data required: Please list what actions have been taken as this was to be done by Aug 20th. We need details and evidences of actions taken. For example, what is planned for each of the 6 steps written in the action plan.** **Action against the three points** Points 1 and two have been covered above under ME admissions. Action against point 3 will be initiated during our visits to industry after 15th October.	HMED and Faculty	Initiating all actions before 20th August and continuing

Recommendation 5	The adoption of structured hands on activities for early stage students. The engine reconstruction project is a good example driven by exemplars in the University of Waterloo. In this the development from a pilot stage is evident and shows the department's ability to initiate and then assess/moderate new teaching activities. TCD looks forward to more being planned.

Action(s) taken	**Responsibility**	**Target Date**
In addition to the engine reconstruction activity, following experiential learning activities were taken up by the ELC in the department during summer vacations, June-July 2018: 4. Jeep project: 24 students are working for conversion of an IC engines based all-terrain sports utility vehicle to an electrical vehicle. 5. E-transportation system (entrepreneurial-transportation system) – Team AEDI and Team RISCIO with 10 students in each are working for developing the first stage prototype for e-transportation system. 6. Design of a bicycle sharing concept using a mobile app - GoGo Bikes: 4 of Mechanical and Mechatronics Engineering Student working on this project. Further, trials for the following activities to be undertaken in the coming semesters have been carried out: 1. Design of Brushless DC Motor and controller – Mechanical and Mechatronics Engineering Student 2. Assembly of a modular CNC machine structure, electrical and electronics components - Mechanical and Mechatronics Engineering Student 3. Bi-cycle dissection and assembly - Mechanical and Mechatronics Engineering Student Some projects which can be taken up as future activities for MED students identified by ELC are as under: 11. Design of a solar water heating system 12. Bicycle dissection and assembly 13. Design of a double column hydraulic lift of automobile servicing 14. Design competition for E-transportation system for TIET 15. Design of a two axis CNC table 16. Design of a modular semi-automatic drill machine 17. Design and manufacturing of wood stove for room heating 18. Design and manufacturing of a general purpose bearing puller 19. Design and fabrication of folding table for ELC activities 20. Design of plate heat exchanger	HMED Coordinator ELC Faculty and staff MED	Already started To be continued

Recommendation 6	Continue to increase support for not-for-credit activity (formula student and GPV)	
Action(s) taken	**Responsibility**	**Target Date**
1. In 2018-19 maximum support will be provided within the allocated budget for the not-for-credit activities. 2. From the next year an endeavour would be made to increase the allocation. 3. The students will be provided enhanced technical support. 4. The will be facilitated through contacts to improve sponsorship money. **Further data required: Please list what actions have been taken as this was to be done.** Had a meeting with members of team Fateh and team Ultron on 27th August at 6 pm and discussed the timelines, funding requirements and other aspects of this year's initiatives. The sponsorship issues were discussed in details. The students will provide a list of potential sponsors including industry. The department will try to identify our senior alumni in these companies and contact them to help the students get funding. The next meeting in this regard will be held around 20th September, 2018	HMED and faculty of MED	Meeting student teams in August and initiating action

Annexure-III

ACADEMIC CALENDAR

ACADEMIC CALENDAR 2017-18

FIRST SEMESTER		
•	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 (1st Year UG) Orientation Program (1st Year PG) Commencement of Classes (1st Year UG) Commencement of Classes (1st Year PG)	24.07.2017 – 28.07.2017 01.08.2017 – 02.08.2017 31.07.2017 03.08.2017
•	Teaching (1st year) (6 weeks) Teaching (2nd & 3rd year) (7 weeks) Teaching (4th 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 (1st, 2nd & 3rd year) (5 weeks) Teaching (4th 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
SECOND SEMESTER		
•	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 (1st, 2nd & 3rd year) (8 weeks) Teaching (4th 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 (1st, 2nd & 3rd year) (7 weeks) Teaching (4th 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.		

Annexure IV

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 ever changing 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 program, 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 ME 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 (# 45in 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 in direct 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. It 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 that 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

<u>TIET Opportunities</u>

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 it 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 to this growing segment is a potential opportunity which will give TIET the first movers 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 courses 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 imbibing 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 after 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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