

POST ACCREDITATION INITIATIVES 2015

**Submitted to
*National Assessment and Accreditation Council
Bangalore***



**Thapar Institute of Engineering and Technology University,
Patiala (Punjab) – India**

November 2015

POST ACCREDITATION INITIATIVES

The Second Cycle of accreditation of Thapar Institute of Engineering and Technology University, Patiala was carried out in April 2009. The Peer Team visited the University on 14-17 April 2009. The Peer Team made recommendations for the Quality Enhancement of the University and identified some areas where improvement could be made. In addition to this, Thapar took several initiatives to contemporize the University. The sections below provide information on the action taken on the NAAC peer review recommendations and other major initiatives taken post accreditation.

Section 1: Action taken on the NAAC peer team recommendations

1. Recruit and retain qualified faculty and staff at various levels.

The largest constraint in the growth of higher education is lack of good 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 have been publicized widely through print and electronic media. The impact of the change has been clearly visible through larger interest among prospective faculty to join the University. Better qualified faculty members have applied. 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 had 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 now entertain applications throughout the year. The compensation paid to faculty is significantly higher than our peers in other Universities to attract the best talent. The details of faculty recruitment (new recruitments –external) and internal promotions during 2015 to give an idea are as under.

Fresh Recruitment in 2015

Designation	Applications Received	Joined
Professor	29	00
Associate Professor	79	00
Assistant Professor	1219	22
Visiting Assistant Professor (From IITs) – Direct campus placement of PhD students	130	05 (2 out of these selected for regular position)
Lecturer (C)	847	27+6*

The academic performance of the faculty is monitored through the student's response survey. The research performance has been measured through research funding received, research publications and number of PhDs and Masters Students supervised. The performance of the faculty has been ranked through a rigorous process and superior performance is rewarded through a unique performance incentive scheme.

2. Make curricular changes and introduction of new courses more frequently.

The curriculum changes are now made at least once in four years. All the courses and programmes underwent revisions in 2014 and again in 2015 to make them outcome based and project led.

3. In material science programme to develop LCD display devices and practical fuel cells as industrial products, and going into manufacturing and commercialization.

The curriculum of Materials Science Program has been thoroughly reviewed and revised in the year 2014 by keeping in mind the guidelines / comments / suggestions received from experts and recommendations of the Board of Studies of SPMS at TU. School is constantly working on Development of CLD devices and Fuel Cells which could lead to their manufacturing and commercialization. Several assignments are in progress at Doctoral level to meet these objectives.

4. To initiate and nurture projects with tangible output in terms of innovative technology and products in several departments.

There has been a gradual 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. In 2015, out of the sponsored projects received from various funding agencies (UGC, AICTE, DST and DOE, etc), 18 were completed during the year and 127 projects are ongoing and progressing towards their completion. 21 new projects were received during the year 2014 - 2015. The total funding received during the year was Rs. 466.35 Lacs. During the year, 345 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. The data on research metrics is given below:

Sponsored Projects	2011-12	2012-13	2013-14	2014-15
Received	37	56	25	21
Ongoing	89	116	106	127
Completed	15	09	17	18

Funds Sanctioned (Rs. in lakh)	613.07	871.88	467.49	466.35
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Publications	2011-12	2012-13	2013-14	2014-15
In Peer reviewed journals listed in SCI/SSCI with Impact Factor	302	320	345	460
In Non SCI Journals	220	276	164	226
In seminars, conferences and workshops	258	245	276	160

5. To review and revise the curricular contents of the post graduate programmes so as to minimize the contents already covered in under-graduate programmes.

The curriculum has been thoroughly revised for all PG programs in line with the recommendations. The details will be shared during the site visit.

6. Avoid falling into the danger too much in-breeding with Ph.D degree recipients from this university continuing to stay in the University for Academic Activities.

The University has taken a decision to not to hire any of our PhD degree recipients for permanent faculty positions unless they have served for at least three years in an Institution of repute. During the last few years

7. To popularize the university in foreign countries and attract more students from abroad.

Thapar Institute of Engineering and Technology University has made teams to popularize the university in Gulf and SAARC countries. Recently we have made visits in these countries to attract the students to our university. In the past years we have conducted seminars to meet the NRI students and parents to highlight the culture of the university along with the learning, overall development and benefits that the students will have by studying at Thapar Institute of Engineering and Technology University. We are also developing strategies to retain and draw more number of students from Gulf and SAARC countries.

8. Involve teachers of other universities in paper setting and evaluation.

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 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.

9. Develop question banks in all subjects.

The question bank for all online examinations has been developed and is being used. Several members of academic staff uses question banks for conduct of MCQ quizzes etc.

10. Major revision in syllabi to be carried out every three years; minor changes to be carried regularly based on the market requirements.

Implemented.

11. Parents-Teachers Associations may be formed.

Thapar Institute of Engineering and Technology University has no formal Parents-teachers Associations. The university however shares the student performance and attendance with the parents through an ERP system. The parents of the students are informed about the performance of their ward through SMS and letters.

IQAC Activities

IQAC (Internal Quality Assurance Cell) has been actively involved in improving the academic systems and processes. The IQAC prepared the Annual Quality Assurance reports and organized the academic review of the departments. Based on the report of the academic review an action plan to implement the findings of the academic review has been developed. The academic review during the first phase was undertaken for engineering departments which admit 80% of our total enrolment. The process covered review of curriculum, research, staffing, infrastructure, governance, academic and administrative decision making, strategic and implementation planning encompassing much of the entire academic culture of the University. The findings report sets out a path, by means of a set of recommendations, to achieve a closing of the performance gap. There are also some observations and recommendations which are core to the contemporisation process. In order to kick start this process of developing an overall plan, an operational document has been developed as a first step listing a broad implementation plan for effecting the necessary changes. The operational document has 91 action points and we have put in a sustained effort to achieve to the goals of the University. **The complete action plan is appended at Annexure 1 of this report.**

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

Some other initiatives of IQAC are listed below:

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

Academic Workload Model

The primary purpose of the Workload Models is to assist in transparent and equitable distribution of work between faculty across various departments/schools. The workload model will be a key tool in relation to the efficient and effective use of resources. The design of the workload model may vary between Department/Schools, reflecting their specific nature and

profile of the activities of each unit. However, the proposed model should be designed having regard to the core principles, and operational aspects as listed below.

Academic workloads will consist of three elements reflecting the core academic functions of teaching, research and contribution to University (administration)/scholarly activity. Just to emphasise again that the allocation model in each academic unit may consider the factors of that unit, particularly in relation to nature of outputs (eg only PG programs, size of Department/School) and complexity of activity.

The precise design of the workload model will however adhere to some core principles as set out below. The model is broadly capable of capturing the workload of each faculty member and is designed to ensure fairness and transparency in relation to the expectations and opportunity for faculty to perform. The model will be flexible enough to cater for unanticipated needs of the Department/School particularly teaching, and in this regard, allocation of duties to faculty and the broad application of the model, is a matter for the Head of DPPC. The annual workload allocation will be available to the faculty of the Department/School for information.

Academic Workload Model – Operational Aspects

The following section proposes a common operational model to form the basis for the design of Department/School-specific workload allocation model using the above principles. A common operational model is needed to ensure a level of consistency between the designs of Department/School-specific workload allocation models across the University.

Unit of workload allocation

The basis of the operational model is that workload is described in terms of a nominal unit of workload allocation where the number of workload units that should be allocated to a full-time faculty member is the same across the University.

Assignment of Workload Units

Assignment of workload units to different activities can then be made by Schools based on local knowledge of the effort involved in their delivery. For example, if there are nominally 500 units in a full workload in a semester, a full course of 80+ contact hours engagement would account for 100 workload units (a 20% time commitment). The number of units can be decided for the individual elements of the model and the numerical values are proposed for them. The model is designed to capture all the significant activities of faculty in the University. It is suggested that measurements should be standard across the University so as to ensure that workloads are equivalent for all members of staff.

The University proposes to have an Academic Workload Model in place for the coming academic year 2016/17.

The following template as shown in Table 1 uses three broad areas of activity carried out by faculty: Teaching, Research & Contribution and Scholarly Activity/ Administration. Some individual elements for inclusion in the model have been identified. For some elements values for workload units is proposed as existing at Trinity. Such standardisation will allow us to compare different departments and schools but the basic objective is to be able to compare workloads.

Basic principles

The workload model is designed to ensure equity between various faculty colleagues in the allocation of tasks; it ensures recognition for the different activities which contribute to the work of the University. It is proposed that for a full-time member of staff the number of workload units should be 1,000 units; all faculty members will be expected to contribute to the three broad areas of Teaching, Research & Contribution and Scholarly Activity/ Administration.

Research and Research Active

Faculty members that are research active according to the University criteria will be allocated a standard number of units (proposed at 200). It is proposed that the model should make no attempt to measure research output apart from the simple active/inactive category for the purpose of this model. Faculty members that are not research active should be allocated a lower number of units for time (assuming that everyone teaching at the university must have time to keep up with their discipline etc beyond simple preparation of teaching).

Seniority and Allocation between Areas

The model assumes that senior faculty spend less time teaching and more on research and administration. The model however assumes that all faculty have a standard norm for the division between different areas. It is also assumed that if some member of staff does not meet the minimum number of units in a particular area, he will need to compensate for it in another area. The model also assumes that this minimum allocation of units to teaching must be met.

The Basic Model

Area	Activities	Range of Units (Illustrative)		
		Professor	Associate Professor	Assistant Professor
Teaching (Every faculty member must acquire the minimum number of teaching units unless exempted by official order)	Undergraduate and postgraduate teaching (lectures, labs, tutorials) taking account of contact hours, marking etc.	250-300	400-450	550-600
Research & Contribution	All research-related activity, not specified in individual workload	450-600	350-450	250-400
Scholarly Activity/ Administration	Administration (Department/School/ University positions);	200-250	150-200	50-100
Total		1,000	1,000	1,000

Detailed issues

1. Research

The 'reserved time' allocated for research could be fixed at 200 units and will be allocated to all staff who meet the requirement of being research active. A faculty member would be designated as a research active staff if he/she publishes at least 6 papers (single or co-authored) in a journal of repute (SCI/SSCI with a minimum impact factor of 0.5) in a three year block period. The other units can be accumulated are by supervising, commercialising, attending conferences counts as part of research. Departments/Schools may wish to encourage specific activities and such activities could receive similar recognition. The methodology proposed to accumulate these units is as under:

Research and Contribution	Suggested Units	% of total time
Research active (Minimum 6 papers in SCI/SSCI with IF of min. 0.5 in a block period of 3 years)	200	20%
Dissertation PG	20	2%
Research supervision (primary supervisor)	50	5%
Research supervision (co-supervisor)	20	2%
PI of an ongoing research project	100	10%
Co-PI of an ongoing research project	60	6%
PI of an ongoing consulting project	30	3%
Co-PI of an ongoing consulting project	20	2%

2. Teaching

The model allocates units per contact hours (@ 2 units per lecture hour and 1 unit per lab/tutorial hour). For example an assistant Professor with a teaching load of L:T:P :: 6:2:6 per week in a semester can accumulate units as under:

Lecture 6/week for 15 weeks @ 2 units per hour = 180 units

Lab/Tutorial 8/week for 15 weeks @ 1 unit per hour = 120 units

Thus the total number of units accumulated in a semester = 300 units.

3. Scholarly Activity/ Admin

The scholarly work includes activities undertaken to promote University profile such as conduct of workshops, conferences, seminars, members of journal editorial boards, representing TU at National/International events or similar activities. The administrative activities can be defined (there could be many more) as under:

Scholarly Activity/ Admin	Suggested Units	%
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Deputy Director	250	25%
Dean	200	20%
Head of Department/School	150	15%
UG/PG/PhD Coordinator	100	10%
Time Table coordinator	60	6%
Project Semester Coordinator	100	10%
Member of University Committee	10	1%
Member of Dept/School Committee	5	0.5%
Coordinator Dept/School reports	30	3%

* Maximum contribution to total workload for supervision of PG and PhD students is 200

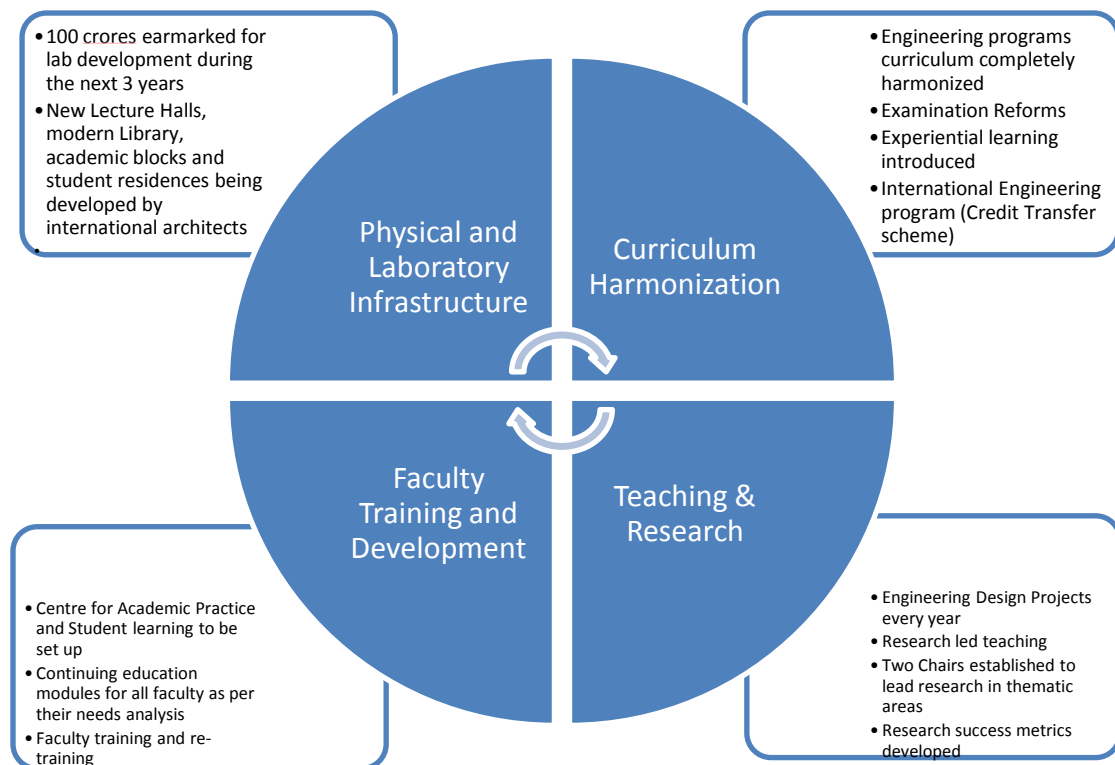
**Maximum contribution to total workload for Contribution to University is 250

***The primary responsibility of the lab and tutorial sessions is with the course coordinators and those engaged in lecturing the classes. It is their responsibility to ensure that the instructors in such sessions are trained and updated.

Major Initiative 1

Contemporization Program:

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



As a first step towards embarking on this journey to contemporize the academic systems and processes at Thapar Institute of Engineering and Technology University, an Academic Review of the engineering departments at Thapar Institute of Engineering and Technology University was completed by a team of experts from Trinity College Dublin in November 2014 on our request. Trinity submitted a detailed written report about the findings. The objective of the review was to identify the gaps between the current performance levels of Thapar and the targeted levels which would take Thapar education systems to a significantly higher paradigm. The review

process covered review of curriculum, research, staffing, infrastructure, governance, academic and administrative decision making, strategic and implementation planning encompassing much of the entire academic culture of the University. The findings report set out a path, by means of a set of recommendations, to achieve a closing of the performance gap. There were also some observations and recommendations which are core to the contemporisation process. An overall plan for change was then prepared. For implementing the findings of the academic review, as a first step the harmonization of curriculum was taken up to bring it up to date with global standards.

Curriculum Harmonization

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

Pedagogy

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

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

Thapar has set up a Research Committee to establish a structured PhD program, form inter-disciplinary research groups, encourage/ support the academics to publish, take research

students, raise research funding and feed this knowledge into advanced undergraduate and postgraduate courses and oversee the setting up of a major Research Centres. The committee will review the metrics for measurement of research output (Publication quantity and quality, PhD student(s) produced, research funding raised, measures of innovation and impact).

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

Faculty Training and Development

As part of the Contemporisation Programme, Thapar Institute of Engineering and Technology University is also setting up a Centre for Academic Practice and Student Learning (CAPSL) which is similar to the 'Trinity's CAPSL unit. Through this centre, TU will expose the 'entire faculty to in-house learning modules including e-learning during the next 3-5 years. An academic needs' analysis is currently underway based on the questionnaire which has been administered to all academic staff. The Senior Academic Developers appointed for the purpose will act in a consultancy role to help Thapar establish the CAPSL centre that will have the skills, knowledge and ability to assist Thapar to achieve its institutional mission and strategic goals. As the centre gets established the CAPSL unit will draw from academic staff across different disciplines with specific interest in and knowledge of different aspects of higher education pedagogy. CAPSL will have one senior academic developer from Trinity and two e-Learning technologists: continuous professional development (CPD) modules and certified programmes will be delivered by CAPSL staff, which will be continuously supported by Trinity academics and other staff. A number of specific needs have been identified (i) Training of all Thapar academic staff, (ii) Awareness training of senior staff (iii) Training of trainers to enable self-sufficiency. The training programmes will be developed based on core needs identified. Trinity staff and associates will deliver this programme at Thapar during the academic year. Each module will comprise 2 two-hour workshops and assessment exercises: participants will be provided with all necessary materials. The existing curriculum will be adapted to reflect the specific academic needs of Thapar faculty. A mentoring programme can also be provided. Participants will be required to submit a teaching portfolio for assessment, which will be developed over the course of the year and will relate to their teaching and learning. Successful candidates will be awarded a Special Purpose Certificate Academic Practice. Trinity in consultation with Thapar will agree the core modules that will form part of the special purpose certificate.

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

Laboratory and Physical Infrastructure

Thapar Institute of Engineering and Technology University has developed a business plan, wherein the University will spend over Rs 500 crores in improving the laboratory and physical infrastructure at Thapar Institute of Engineering and Technology University. In order to modernize the Institution, Thapar team has developed a modernization plan for the important teaching and research laboratories in consultation with Trinity. Thapar Institute of Engineering and Technology University has also hired world class foreign architects to develop key academic

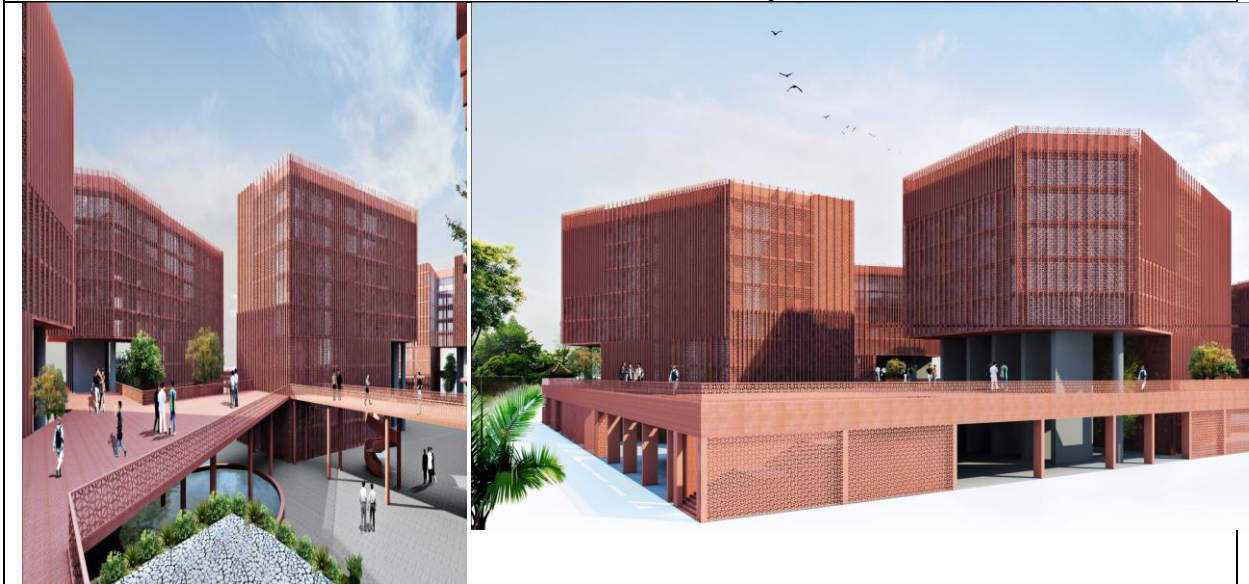
infrastructure that would include lecture hall complex, library, CAPSL centre, student residences and other academic blocks. Face lifting and modernization of older buildings has also been planned in a major way. Thapar Institute of Engineering and Technology University is also engaging services of a consultant to implement a international ERP system to manage and govern the academic and administrative functions.

The rendered view of some of the proposed building that will come up by 2017 are provided below:

Learning Centre



Student Residences – Boys



Girls Residences



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

Examination Reforms

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

Engineering Design Projects

Major Initiative 2

Measuring attainment of Student outcomes and course learning outcomes

(This activity is undertaken by the IQAC every semester)

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

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

Direct Measures

- Student Assignments
- Projects
- Examinations

In-direct measures

- Surveys and questionnaires
- Exit interviews

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

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

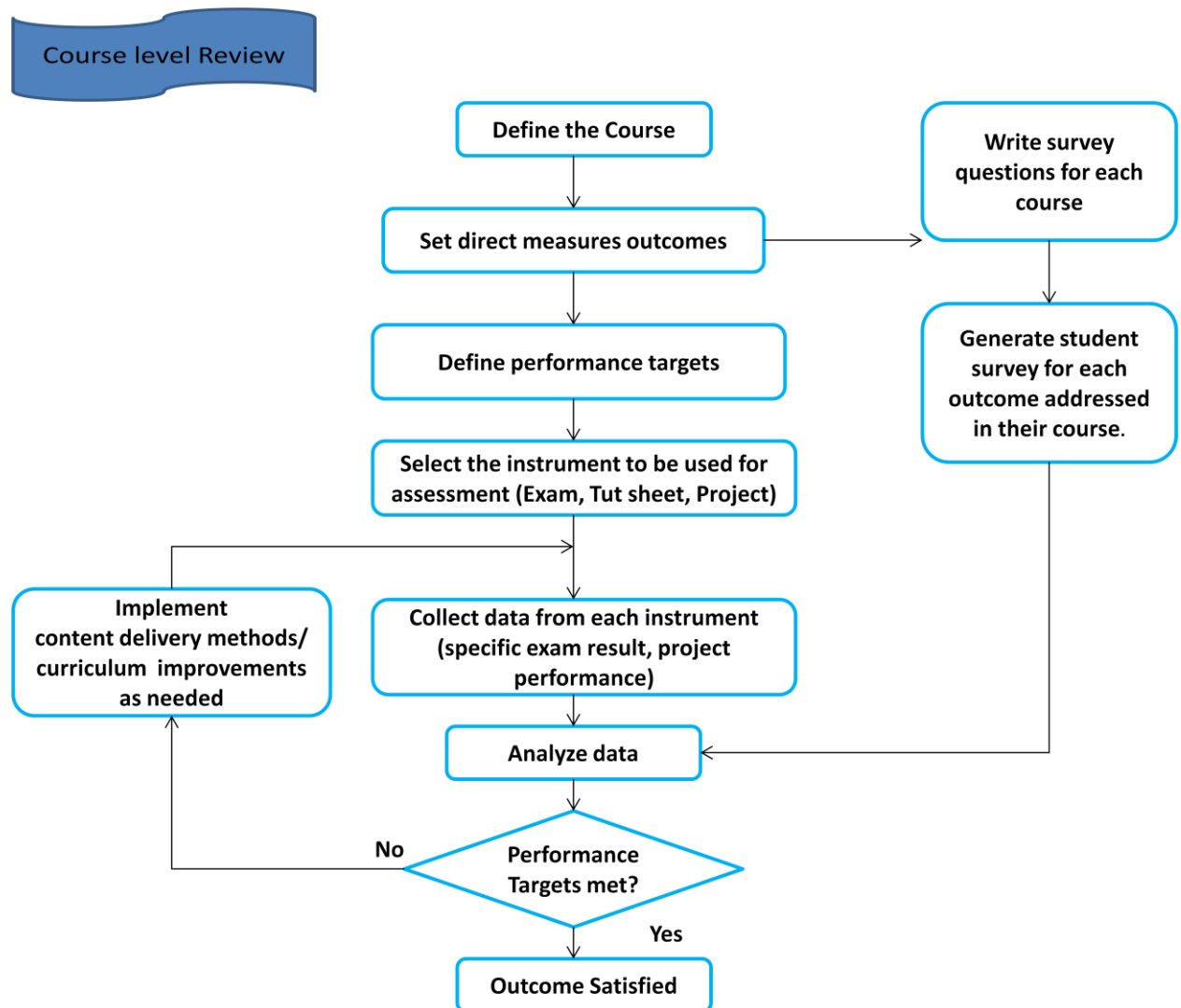
In order to assess the achievement of outcome 'A' through performance criterion 'A3', the courses are already identified in Table 4.2. For each of these three courses, at the course level, identify the course outcome that would measure the achievement of outcome 'A' through performance criterion 'A3'.

- **Course level**

As the performance criteria at the program level flow to the course level, then specific interpretation in each course constitute the course outcomes in each course. For example: specific interpretations listed above are the actual course outcomes in these courses that contribute to the program level A3 performance criteria. In each course, we assess the level of achievement of each course outcome. The data are then combined to analyze and evaluate the

program level achievement of each program outcome. If any student outcomes are not met, action is taken for improvement.

The procedure followed at the course is depicted below:



Assignment/Examintaion level

Throughout the semester, the course instructor uses specific questions in tutorial or home assignments (HA), laboratories or examinations directly related to course outcomes. For example: in case of **Computer Aided Design** questions specifically targeting A3 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 A using performance criteria A3 is explained as under:

Assessment of Outcome 'A' using performance criterion A3

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

11.	101308116	UTSAV MUDGAL	14.5	5
12.	101308101	SHIKHAR GAUR	14	5
13.	101488016	SARANG VASHISHT	14	5
14.	101308112	SIMRANDEEP SINGH BHULLAR	14	5
15.	101308122	VISHAL SOLANKI	14	5
16.	101308094	SAGAR SINGLA	13	5
17.	101308103	SHUBHAM	12	4
18.	101308110	SIDDHARTH VASU	12	4
19.	101308113	SOURAV SINGLA	12	4
20.	101308118	VARMEET SINGH GULATI	12	4
21.	101308069	KIRAT SINGH BASUR (CR)	11	4
22.	101308070	KSHITIJ SHARMA	11	4
23.	101488014	NIKHIL GUPTA	11	4
24.	101308119	VARUN ATRI	11	4
25.	101308120	VEDANT MANSOTRA	11	4
26.	101308124	VIVEK PUNDIR	11	4
27.	101308114	TANJAY PATHAK	10	4
28.	101308082	PARAMJOT SINGH	9	3
29.	101308080	NIKHIL GANTA	9	3
30.	101308088	PULKIT KAPOOR	9	3
31.	101308105	SHUBHAM CHAUDHARY	9	3
32.	101308109	SIDDHARTH GUPTA	9	3
33.	101308111	SIDHANT	9	3
34.	101308033	EKANSH KUMAR SRIVASTAVA	8	3
35.	101308081	NITIN BANSAL	8	3
36.	101308078	NIDAN PRAKASH	8	3
37.	101308085	PRABHMAN VIR	8	3
38.	101308090	RAJAT GUPTA	8	3
39.	101308097	SAMDEEP SINGH SABHARWAL	8	3
40.	101488015	SANKIT	8	3
41.	101308115	TANUJ LAMBA	8	3
42.	101308091	RAMNISH KUMAR	7	2
43.	101308093	ROHAN KAUSHAL	7	2
44.	101308089	PUNEET SINGH	6	2
45.	101308096	SAHIL SHARMA	6	2
46.	101308099	SARTAJ SINGH GILL (CR)	6	2
47.	101308074	MANIK SAHARAN	5.5	2
48.	101308079	NIKHIL AGGARWAL	5	2
49.	101488013	NAVJOT RIHAL	5	2
50.	101308125	YASHWARDHAN SHARMA	5	2
51.	101308084	PRABAL SHARMA	4	1
52.	101488008	ISHAN	4	1
53.	101308071	LOKENDRA KUMAR	3	1
54.	101308075	MANISH PANDOH	3	1
55.	101488017	VARUN BANSAL	3	1
56.	101308073	Manavdeep Singh Grover	1	1

57.	101308106	SHUBHAM GUPTA	0	1
58.	101308121	VIKRANT NANDA	0	1

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

Average score of student performance in the course UME 401 for criteria A3

Course	% of students in each score					Average Score
	5	4	3	2	1	
UME401	27.59	18.97	24.14	15.52	13.79	3.3

Similar assessment using the course portfolio was used for the remaining courses identified for assessing performance criteria A3.

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, graduating student survey, employer survey and alumni surveys wherever necessary to get to a final assessment score for each performance criteria. These scores for each performance criteria are then summarized to obtain the attainment level for each student outcome.

The assessment completed using the surveys for performance criteria A3 is also provided below:

Assessment Tool: Student Response Survey (Course survey)

Average score of student course survey for criteria A3; course: UME401

Course	% of students in each score					Average Score
	5	4	3	2	1	
UME401	25	34.1	27.3	6.8	6.8	3.64

Assessment Tool: Graduating student Survey and Alumni Survey

Assessment for criteria A3 using Graduating student Survey and Alumni survey tool

Assessment Tools	% of students in each score					Average score
	5	4	3	2	1	
Graduating student's survey	45	40	5	5	5	4.15
Alumni survey	40	45	5	5	5	4.10

Step 3- (a) Weighted average from course portfolio

There were three courses which were used to assess the attainment of performance criteria A3. The program faculty decides that each course contributing to a particular performance criteria does so at a varying level. The faculty assigns weight on a scale of 1 to 5, describing how each course contributes to a particular performance criterion. Using these weights and scores from each course portfolio for each performance criteria, we compute the weighted average score for each performance criteria. The sample calculation for evaluation of weighted average score of performance criterion 'A3' using course portfolio tool is given in Table 4.12

Weighted Average Student class performance (course portfolio) for criteria A3

Courses	% of students in each score					Average Score	Weight
	5	4	3	2	1		
UME401	27.59	18.97	24.14	15.52	13.79	3.3	5
UME701	30	38	20	6	5	3.81	5
UME802	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: Student Response Survey

Weighted Average student course survey for criteria A3

Courses	% of students in each score					Average Score	Weight
	5	4	3	2	1		
UME401	25	34.1	27.3	6.8	6.8	3.64	5
UME701	28	59	10	0	3	4.09	5
UME802	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 each performance criteria (for example A3 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 scores obtained from graduating student survey and alumni survey (from table above), we computed the weighted average for each performance criteria.

Table 4.14: Overall weighted average score of performance criterion 'A3'

Assessment tools	% of students in each score					Average weighted score	Assessment tool Weight
	5	4	3	2	1		

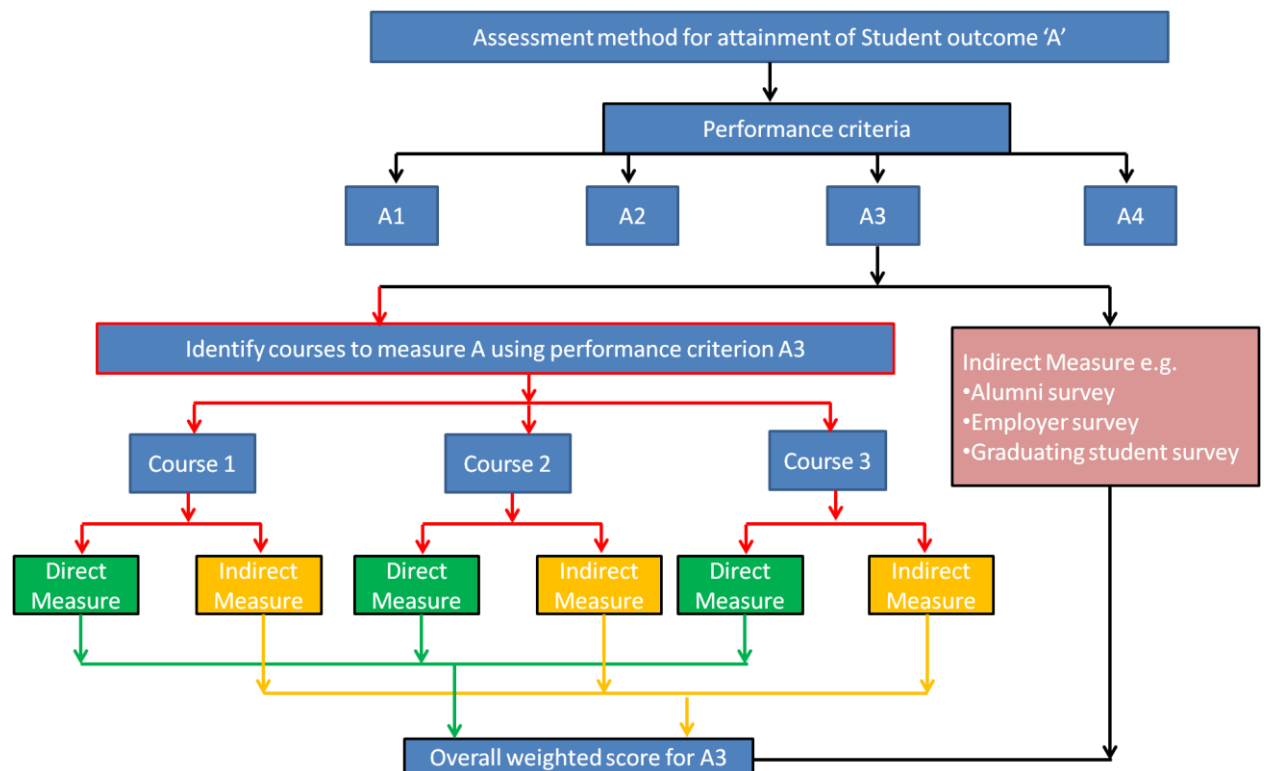
Weighted average student class performance	32	29.63	22.91	8.4	7.88	3.71	5
Weighted average student course survey	24.07	53.25	16.75	2.43	3.5	3.92	4
Graduating student survey	45	40	5	5	5	4.15	3
Alumni survey	40	45	5	5	5	4.10	3
Overall weighted score	34.09	41.08	14.10	5.45	5.56	3.93	15

Overall weighted score for A3 performance criteria is given by

$$\text{Overall} = \frac{[3.71 \times 5 + 3.92 \times 4 + 4.15 \times 3 + 4.10 \times 3]}{5 + 4 + 3 + 3} = 3.93$$

The overall score for performance criteria A3 is thus 3.93 on a scale of 1 to 5.

The process of assessment of SO's is summarized below:



Major Initiative 3

Continual Improvement of academic processes and programs at Thapar Institute of Engineering and Technology University

Goal

The aim of the practice followed by the University is to continually improve the effectiveness of its laid down systems and processes by regularly assessing and evaluating the extent to which the University quality policy and objectives are being attained. For this purpose, a quality policy has been established, displayed at prominent locations in the University and everyone has been made to understand the intent of the quality policy and the commitment contained in it. Quality objectives along with their means and measures have been established for various functions and levels. The management periodically reviews the policy and objectives for continuing suitability, adequacy and effectiveness by provision of adequate resources.

The Context

The University has committed itself to the development and implementation of a continuous improvement process for improving the effectiveness of the academic processes and programs. For measuring the effectiveness of the processes, key academic objectives have been identified. Targets are set against each of these objectives that define the expected level of attainment for each objective. The data is collected periodically from each stake holder at the end of each semester and reviewed in a meeting of the top officials of the University. Summary of the results of the evaluation indicating the level achieved is prepared and used as an input for setting targets for the next year. The results of these processes are utilized to effect continuous improvement of the academic processes and the programs offered. For doing this assessment methods are used to gather the data upon which the evaluation of each objective is based.

The Practice

Each academic program completes a SWOT analysis at the beginning of each academic year in its faculty meeting through brainstorming. The results of the SWOT analysis are then used to identify key and critical areas of concern where action plans must be initiated to improve performance. These critical areas are then converted to a "University Risk Management" (URM) sheet which clearly describes the risk of not undertaking this improvement in the short and the long term followed by an action plan, responsibility and the completion date till the time the risk level on the URM sheet is categorized as low. A blank sheet showing the URM form is given below:

URM SHEET: DEPARTMENT OF CHEMICAL ENGINEERING, THAPAR INSTITUTE OF ENGINEERING AND TECHNOLOGY UNIVERSITY, PATIALA

Location/ Function	Risk Description	Risk Level & Reasons (Why)	Action Steps	By Whom (Accountability)	By When (Time frames)	How/Method	Target Risk Level	Comments
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Also, targets are set for critical academic and research parameters critical for the growth of the University and are reviewed periodically. The targets are set for the following key academic performance indicators:

1. **Academic Credit Score:** The credit score is calculated for each program and is indicative of the course weight and the number of students who undertake that course. The score for a program provides an insight into the faculty requirements for that program and the teaching load of the department. This score is calculated separately for both UG and PG programs.
2. **Faculty strength and student-teacher ratio**
3. **Number of faculty with PhD**
4. **Number of PhD's produced and admitted every year**
5. **Number of Publications in SCI journals**
6. **Number of sponsored research and infrastructure projects**
7. **Number and amount of consulting assignments**
8. **Number of full time Teaching Assistant/Research Scholars**
9. **Number of new UG or PG programs proposed**
10. **Student Placement separately for UG and PG**
11. **Collaborations, conferences and short term courses**

The data is collected for each program and reviewed. The results of this analysis are used to plan targets for the subsequent years.

Evidence of Success

The action plan as listed in the URM sheets is monitored to evaluate the effectiveness of the actions taken. The abstract of the URM sheets for 2012-13 is as under:

There are in all 14 departments/school/functions for which the URM has been prepared along with the detailed SWOT of each departments. In all there are 62 identified Risks across the 14 departments. There are 39 High risks & 18 Medium risks. The risks have been categorized under broad headings such as faculty, research output, infrastructure, research scholars etc. The URM projects shall be reviewed for evaluating the success of each project in reducing the risk.

The target setting for each department has helped to focus on its performance every year. The best performing department is announced on Teacher's day every year. A sample sheet for the research targets for the previous year is given below as evidence of success of this practice.

RESEARCH ACTIVITIES:												
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Publication Number														
	DBT ES	CH ED	CIV IL	CS ED	EC ED	EIE D	ME D	SCB C	SM CA	SM SS	SPM S	SO M	TOT AL	
SCI Journals														
2009-2010	22	4	7	1	33	7	0	17	10	2	45	0	148	
2010-2011	32	11	18	12	46	9	9	15	16	1	50	1	220	
Proposed:20 11-12	33	15	20	15	50	10	15	25	30	5	70	1	289	
International Conferences														
2009-2010	7	15	15	26	22	11	16	4	12	7	20	0	155	
2010-2011	19	11	19	29	21	16	41	11	24	2	18	8	219	
Proposed:20 11-12	8	13	10	20	25	20	25	5	25	5	25	10	191	
Research Projects (Rs Lacs)														
2009-2010	26.0 0	27. 09	29. 00	0.0 0	0.0 0	0.0 0	52. 00	80.7 4	0.0 0	0.0 0	48.7 0	0.0 0	263. 53	
2010-2011	65.7 5	20. 00	12. 26	17. 55	11. 34	32. 62	11. 08	54.4 2	92. 77	6.9 0	67.4 7	0.0 0	392. 16	
Proposed:20 11-12	203. 00	60. 00	45. 00	20. 00	30. 00	20. 00	50. 00	100. 00	80. 00	10. 00	100. 00	0.0 0	718. 00	
Number of Projects														
2009-2010	3	1	1	0	0	0	2	4	0	0	3	0	14	
2010-2011	5	1	1	2	1	2	1	3	4	1	5	0	26	
Proposed:20 11-12	14	5	4	4	5	2	4	8	4	2	10	0	62	
Patents/Copyrights														
2009-2010	5/0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/0	0/ 0	5	
2010-2011	0	0	0	0	0/ 0	0/ 0	0	0	0	0	0	0	0	
Proposed:20 11-12	1	0	0	0	0	1	0	2	0	0	2	0	6	
PhDs Awarded														
2009-2010	4	1	0	1	0	1	1	1	4	6	4	0	23	
2010-2011	6	2	1	0	5	2	2	1	3	2	6	0	30	
Proposed:20 11-12	12	3	4	3	3	3	2	4	8	3	6	0	51	
Consultancy & Testing (in lacs)														
2009-2010	9.00	0.2 6	39. 1	0.0 0	0.0 0	0.0 0	0.0 0	0.00	0.0 0	0.0 0	1.00	0.0 0	49.3 6	
2010-2011	3.00	0.0 0	42. 0	0.7 5	0.0 0	0.0 0	3.3 0	0.00	0.0 0	0.0 0	1.00	0.0 0	50.0 5	
Proposed:20 11-12	2.00	0.5 0	50. 00	1.0 0	0.0 0	2.0 0	3.0 0	1.00	0.0 0	0.0 0	1.00	0.0 0	60.5 0	

ACTION PLAN - Academic Review of four departments

Action No. 1	<p><u>Gap identified: Culture</u></p> <ul style="list-style-type: none"> • Teaching-research balance leans heavily towards the teaching end of the spectrum. • To improve performance to the stated target a significant emphasis on research is required. This would require to develop metrics for measuring the research output of each department • In re-balancing in the direction of research, there should be overall less teaching effort for academic staff as a whole. 		
<p><u>Recommended Action(s)</u></p> <p>Reduce contact hrs. of teaching and length of the semester. (18 to 15 weeks reduction and incorporate three reading weeks spread over the semester) Will need to revise regulations</p> <p>Re-allocate Teachers load – Teaching+Research+Admin. (Wider discussions and action after discussions with all academic functional heads)</p> <p>Review all Core (1st year) and Professional courses for outcome base, project (self-study, topics for self learning to be in the syllabus) led teaching linked to program outcomes.</p> <p>Departments to review all courses for outcome of each program. Department to define requirements for all Professional courses and link these to what should be taught as core (basic / 1st year/ fundamental) courses.</p> <p>Each department will develop metrics that will be used to measure the research output of the department over a period of time.</p>	<p><u>Responsibility</u></p> <p>DOAA, DRSP and the four HOD's</p>	<p><u>Target Date</u></p> <p>Departmental plan- End Feb 2015.</p> <p>End Feb 2015.</p> <p>Complete by May 2015 BOS+SUGC/SPGC+Senate for 2015 admission.</p> <p>Applicable from academic year 2015-16 (develop by May 2015)</p>	
Action No. 2	<p><u>Gap identified: Teaching</u></p> <ul style="list-style-type: none"> • Curriculum is heavily content-driven with a focus on universal coverage of a linear sequence of syllabus topics • Less focus on the associated use of design and application and over reliance on text-book type material • Little evidence of research linkage • Considerable effort goes into assessment. 		
<p><u>Recommended Action(s)</u></p> <p>Complete review of the curriculum for the four departments will be undertaken to make it outcome based with research inspired teaching. The visit of the Dean and the heads of the</p>	<p><u>Responsibility</u></p> <p>DOAA and the four</p>	<p><u>Target Date</u></p> <p>June 2015.</p>	

<p>departments to TCD will be used to understand and implement this major activity. Flexible evaluation scheme will be implemented apart from MST and EST and project based courses.</p>	<p>HOD's <u>("A")</u></p>	<p>Plan ready by End Feb 2015</p>	
<p>Action No. 3</p>	<p><u>Gap identified: Teaching</u></p> <ul style="list-style-type: none"> • Specific learning objectives should be defined for project semester • Introduce teaching innovation and entrepreneurship in senior years. 		
<p><u>Recommended Action(s)</u> Syllabus will be modified to specify content / rubrics of the projects to be followed by the students and faculty for evaluation. The learning objectives will be listed. Departments will review with LOs taken from the Industrial exposure.</p> <p>Teaching innovation and entrepreneurship will be covered in Capstone project implementation. Entrepreneurship to be covered in some course run by TU / TCD.</p>		<p><u>Responsibility</u> DOAA and the four HOD's <u>("A")</u></p>	<p><u>Target Date</u> End Feb 2015. End Feb 2015</p>
<p>Action No. 4</p>	<p><u>Gap identified: Teaching</u></p> <ul style="list-style-type: none"> • Scrutiny of grades at programme level by convening examination boards 		
<p><u>Recommended Action(s)</u> Program wise examination boards shall be created for both UG and PG Programs to examine the examination patterns including the quality of question papers, evaluated answer sheets, laboratory examinations, seminars and scrutiny of grades awarded. The examination board will consist of one program expert from premier institutes, one member from the cognate area from outside the department/school and two senior members of the department/school. The action points are:</p> <ol style="list-style-type: none"> 1. The list of program experts will be prepared by the respect department/school in consultation with experts from premier institutions. 2. Department panels members and cognate member of board for each program shall be prepared by departments/schools 3. COE with approval of the Director will appoint the examination board for each academic year which will conduct its activities with one month of the end semester examination. 		<p><u>Responsibility</u> COE and Heads of the Departments <u>("A")</u></p>	<p><u>Target Date</u> The procedure will be developed by March 31, 2015 and will be put up for approval of the academic and other bodies by May 2015 to be implemented from academic year 2015-16.</p>

4. The department will analyze the findings of the report and take necessary corrective / preventive action(s) within the next one month.		
Action No. 5	<u>Gap identified: Research</u> <ul style="list-style-type: none"> • Create conditions where staff and students engage in research at the frontiers of knowledge. • Ensure that academic staff engages in top quality research-led teaching. 	
<u>Recommended Action(s)</u> In the first phase, professional senior level courses will be identified in which the faculty will be requested to identify small research based projects from the course content. Groups of students will be allotted these projects under the supervision of these faculty members and will be evaluated at the end of semester. More number of PDF will be instituted by offering better fellowship as compared to other funding institutions. The faculty under whom PDF joins will be expected to share such load and improve the research output. Dean RSP will generate metrics to ensure that academic staff engages in top quality research-led teaching.	<u>Responsibility</u> DRSP and the HOD's <u>("A")</u>	<u>Target Date</u> June 30, 2015
Action No. 6	<u>Gap identified: Research</u> <ul style="list-style-type: none"> • Research activity is in its infancy at Thapar and if it is to realize the objectives of its contemporisation programme, significant investment in staff and infrastructure will be required. 	
<u>Recommended Action(s)</u> In each department, atleast one Research Centre in area of significant strength of faculty will be created. The centre will be identified and funded jointly through targeted project funding from the funding bodies as well as the University funds. The Research Centre(s) will also undertake consultancy and testing activities. The departments will be requested to identify at least one such centre during the next semester and then focus on developing infrastructure and staff in that area for the next two years to create a world class facility.	<u>Responsibility</u> DRSP and the HOD's <u>("A")</u>	<u>Target Date</u> Identification of the proposed research Centre(s) by Feb 28, 2015.

Action No. 7	<p><u>Gap identified: Research</u></p> <ul style="list-style-type: none"> • Mentoring, IPR and the formation of spin-out enterprises. • An integrated research plan should be developed for the university, identifying selected areas in which there is potential to excel. 		
<p><u>Recommended Action(s)</u></p> <ul style="list-style-type: none"> • Providing the opportunity to students to develop a mentoring relationship with industrialists/ alumnus who share their educational and professional experience to help students achieve greater success in their academic and career pursuits. Hence organization of workshops with industrialist/alumnus to explore professional/career opportunities is required to mentor the students. • Learning and teaching, curriculum design and research strategies will reflect changing expectations of how future graduates will contribute to the economy, academics in engineering and other innovative disciplines. Hence it is necessary to re-think undergraduate curricula to enhance students’ entrepreneurial skills, which includes their awareness and competence in respect of intellectual property rights. There is no well established pedagogy for educating engineers, scientists and innovators about intellectual property. By intended learning outcomes and assessment tasks, students can be encouraged to manage their learning about intellectual property rights. • Enterprise creation: To enhance and increase student creation of new companies, we need to organize and deliver seminars to students that explains how to successfully create new companies, encouraging students to pursue enterprise initiatives and awards, provide support to new and existing spin out companies so they can grow and become sustainable by providing mentoring and helping them access personnel, funding and network. 	<p><u>Responsibility</u> Dean, Resource Mobilization & Organizational Effectiveness <u>(“A”)</u></p>	<p><u>Target Date</u> 500 mentors to be identified in two years. First 50 will be identified by the end of July 2015</p> <p>First draft of a revised curricula incorporating the proposed changes will be prepared by the end May 2015</p> <p>Five start-ups by August 2015</p>	
Action No. 8	<p><u>Gap identified: Research</u></p> <ul style="list-style-type: none"> • Encourage and support staff to raise funding (particularly collaborative funding) involving industry and other academic institutions both inside and outside India. • Steady flow of good full-time PhD students (encourage the top performers among Thapar BE and/or ME programmes). 		

	<ul style="list-style-type: none"> • Offer exciting, well-funded projects to TU graduates in pursuing PhD's locally 		
	<p><u>Recommended Action(s)</u> In each department, a Research Incharge (RI) will be nominated. RI will channelize the faculty for writing projects. Interdisciplinary projects will be identified. Attempt will be made to get them funded from industries/government institutions.</p> <p>DST projects offered by different countries will be taken on priority basis.</p> <p>Strength of regular Ph.D. students will be increased. This may need increasing the fellowships in line with what the Government agencies offer. The departments will be urged to accept only regular PhD students other than exceptional candidates from industry.</p>	<p><u>Responsibility</u> Director, DRSP and the four HOD's <u>("A")</u></p>	<p><u>Target Date</u> July 31, 2015</p>
Action No. 9	<p><u>Gap identified: Research</u></p> <ul style="list-style-type: none"> • Broad base strategic plans with industry partners to determine strategic fit. The outputs should include: focused placements for undergraduates, funding for full time PhD scholarships and development of enterprise PhDs 		
	<p><u>Recommended Action(s)</u> The area of Nanotechnology where several faculty are working will be undertaken as a broad area of cooperation during the first stage. Group of faculty from different departments will be identified and accordingly the projects will be undertaken.</p> <p>Local and reputed industries from Punjab, Haryana will be tapped for industry based research projects. The trained Ph.D./M.Tech students will visit industry for the testing and this will also open path for their placements.</p> <p>TA fellowship and its number will be enhanced to attract more number of students. Moreover, students completing UG/PG program from TU will be offered TA Ship directly if they wish to join the Ph.D. programme.</p>	<p><u>Responsibility</u> Director, DRSP and Head CILP and Associate Dean Strategy <u>("A")</u></p>	<p><u>Target Date</u> July 2015</p>
Action No. 10	<p><u>Gap identified: International Collaboration</u></p> <ul style="list-style-type: none"> • To raise new funding • Expose staff to global research and industry practice and state-of-the-art thinking. • Faculty members should visit through international placements and sabbatical to Universities where research-led 		

	teaching is prioritized.		
<u>Recommended Action(s)</u>	International collaboration will be encouraged between faculty so that the staff are exposed to global research and industry practice and state-of-the-art thinking. The terms of the Professional Development Allowance will be re-looked into to ensure that academic staff engages with their peers abroad.	<u>Responsibility</u>	<u>Target Date</u>
		DOPA, Four Heads of Departments <u>("A")</u>	Feb 28, 2015 to prepare a strategy to improve international collaboration.
Action No. 11	<u>Gap identified: Publications</u>		
	<ul style="list-style-type: none"> • Emphasis on publication in SCI journals. • Participation in international conferences should be encouraged • Create flexibilities in accommodating conference travel within the teaching timetable. • Top conferences may also be noted in publication scores. 		
<u>Recommended Action(s)</u>	All faculty members will be asked to publish paper in SCI journals only having minimum of 0.5 impact factor. Funds will be created (use of PDA will be re-looked into) for attending and presenting papers in international conferences. Faculty will be encouraged to participate in conferences.	<u>Responsibility</u>	<u>Target Date</u>
		DRSP and Four Heads of Departments <u>("A")</u>	Jan 31, 2015
Action No. 12	<u>Gap identified: Publications</u>		
	<ul style="list-style-type: none"> • Construct reward schemes carefully to allow and encourage multidisciplinary and collaborative research. • Emphasis on publication in SCI journals. • Top conferences may also be noted in publication scores. • Practice of dividing credit associated with a publication by the number of authors could significantly hinder this. 		
<u>Recommended Action(s)</u>	<ul style="list-style-type: none"> ➤ Publications by faculty and/or students involving more than two units of TU and/or faculty from benchmarked Institutions to be given higher weightage in PIS. ➤ The top conferences shall be listed in consultation with Heads of Units and these are already considered during PIS Awards and in promotions. ➤ The practice of dividing credit associated with a publication by the number of 	<u>Responsibility</u>	<u>Target Date</u>
		DOFA <u>("A")</u>	1 May 2015

authors will be discussed with all heads before implementation.		
Action No. 13	<u>Gap identified: Facilities</u> Investment in the highest level of instrumentation, data acquisition and computing equipment in general should be prioritized and supported	
<u>Recommended Action(s)</u> The University will develop a strategic plan that will be guiding document on future investments in research centres.		<u>Responsibility</u> Associate Dean Stratgy <u>("A")</u>
<u>Target Date</u> Feb 28, 2015		
Action No. 14	<u>Gap identified: Publications</u> <ul style="list-style-type: none"> • At present, there is little or no computational modelling based PhD programmes. • Modelling studies and particularly those associated with in-house experimental work will generate significant added value to the research and increase quality research publication output. These should guide new staff hiring. 	
<u>Recommended Action(s)</u> Mostly valid for Mechanical and Civil Engineering Departments. The departments will take necessary action in this regard.		<u>Responsibility</u> Four Heads of Departments <u>("A")</u>
<u>Target Date</u> June 1, 2015		
Action No. 15	<u>Gap identified: Computing Facilities</u> <ul style="list-style-type: none"> • Computing equipment is quite old and it is important to keep it up-to-date. • The provision of computing equipment and network connectivity is not scalable in its present form. • Planning and investment is needed to create a unit that could deliver the superior service that expansions will demand. 	
<u>Recommended Action(s)</u> CITM will procure latest machines and already requested for space allocation for Data Centre and central computing facility; this facility will be made available to researchers/faculty members as per their requests. Data Centre and Network Operation Centre's network back-bone will be provisioned for 10G connectivity. It will be budgeted in year 2015. Planned expansion is chalked out and within span of two years; we will have state-of-the-		<u>Responsibility</u> Head CITM <u>("A")</u>
<u>Target Date</u> 1 Dec 2016* 1 Dec 2015* 1 Dec 2017*		

art network facility and ERP offerings at TU campus.			
Action No. 16	<u>Gap identified: Infrastructure</u> <ul style="list-style-type: none"> • Investment in basic infrastructure such as offices for academic and research staff • Quality soundproof seminar/meeting rooms is needed • Office space is poor and the forward plans for space provision do not seem to address this. 		
<u>Recommended Action(s)</u> A complete plan will be prepared for developing the basic infrastructure in the departments for the academic and research staff as well as upkeep of the space		<u>Responsibility</u> OSD & CMS team in consultation with Heads <u>("A")</u>	<u>Target Date</u> Plan to formulated by Jan 31, 2014
Action No. 17	<u>Gap identified: Research Led Teaching</u> <ul style="list-style-type: none"> • Must expose all students at UG level to research activity and interests. • All academic staff, particularly newly appointed Asst Profs should be encouraged to develop courses associated with their research area for senior level and Master's students. • Remove traditional material where there is no leading expertise. • More senior research staff with long teaching experience to be encouraged into developing novel teaching practices, the focus of which should be the 1st and 2nd year programmes. 		
<u>Recommended Action(s)</u> Dept. may offer electives where possible in the new faculty's expertise, to be run considering dept. resources of S/T ratio, faculty number, labs, etc. The traditional material offered in the programs will be reviewed along with the curriculum review. UG students work with PhD students		<u>Responsibility</u> DOAA and Heads of the departments <u>("A")</u>	<u>Target Date</u> July 2015
Action No. 18	<u>Gap identified: Faculty</u> <ul style="list-style-type: none"> • Academic workload should comprise of research, teaching and administration. The distribution of work across these three categories should reflect the strengths of each individual faculty member and doesn't have to be equal for all staff. • Full time PhD students may assist in teaching duties such as tutorial and laboratory supervision and marking. The teaching duties of such students not to exceed eight hours per week, and these students should be formally trained and mentored. 		

<p><u>Recommended Action(s)</u> Faculty having high research output will be given less teaching load once the student teacher ratio improves. The academic staff will be provided with TA to help them in assessments. TA will help in other assigned load like tutorial and laboratory classes.</p>	<p><u>Responsibility</u> DOAA and Heads of departments <u>("A")</u></p>	<p><u>Target Date</u> July 2015</p>
<p>Action No. 19</p>	<p><u>Gap identified: Faculty</u></p> <ul style="list-style-type: none"> • The criteria for promotion should be reviewed so that consistently high performance by junior staff is rewarded, • Hiring staff on short-term contracts should be minimized. • Senior to junior staff ratio is out of balance • Insufficient flexibility in the selection criteria for recruiting staff. • The student-staff ratio needs to be improved. A student-staff ratio of 16:1 would be an acceptable target. 	
<p><u>Recommended Action(s)</u></p> <ul style="list-style-type: none"> ➤ DOFA will draft a policy for discussion and approval of the competent authority to address these issues related to faculty hiring and promotions. ➤ Staff on sort term contract to be minimised from 16% to 10% by 1/7/2016 to 5% by 1/7/2017. 	<p><u>Responsibility</u> DOFA and Heads of departments <u>("A")</u></p>	<p><u>Target Date</u> Jan 31, 2015 and before the next round of selections</p>
<p>Action No. 20</p>	<p><u>Gap identified: Consultancy</u></p> <ul style="list-style-type: none"> • The role and scale of consultancy activity should be thoroughly reviewed • Develop a policy to ensure that it provides an academic return to the university that is commensurate with the academic and other resources committed to it. 	
<p><u>Recommended Action(s)</u> Instructions will be given to faculty members to route the consultancy work through the cell created in their respective department.</p> <p>The consultant policy and procedure will be reviewed to ensure that it provides an academic return to the university that is commensurate with the academic and other resources committed to it.</p>	<p><u>Responsibility</u> Dean RSP <u>("A")</u></p>	<p><u>Target Date</u> March 31, 2015</p>
<p>Action No. 21</p>	<p><u>Gap identified: Academic Staffing</u></p> <ul style="list-style-type: none"> • The senior staff have a lower teaching workload and have first choice of the courses they wish to deliver. These should be 	

	<p>reviewed to ensure that an undue burden of new course preparation does not fall on junior or research-active staff members.</p> <ul style="list-style-type: none"> • Teaching duties should be aligned with staff expertise. All staff should teach a mixture of foundation and advanced courses. • All courses should be reviewed annually, as appropriate, taking into account recent developments in research. • Engage faculty in Continuing Professional Development (CPD) to hone their Teaching skills, including exposure to novel teaching methodologies; Academic writing and language skills; Writing research applications, Project management; etc 		
<p><u>Recommended Action(s)</u></p> <p>As far as possible the departments will give a choice to junior faculty to teach courses of their area of expertise. DPPC to ensure this from the next academic year.</p> <p>The faculty will be requested to review the courses taught by them annually to incorporate the recent research in that area.</p> <p>For Continuing Professional Development (CPD), a Teaching Practice and Staff Development Unit will be created.</p>		<p><u>Responsibility</u></p> <p>DOAA and Heads of departments <u>(“A”)</u></p>	<p><u>Target Date</u></p> <p>July 2015</p>
<p>Action No. 22</p>	<p><u>Gap identified: Technical and Supporting Staff</u></p> <ul style="list-style-type: none"> • Acute shortage of technical staff in all areas surveyed; new technical staff need to be recruited. • Arrangements should be made to enable all technical staff to regularly update their skills. • Technical staff should play a more active part in teaching support and laboratory-based assessment. • Over-reliance on short-term contract technical staff to address systemic and ongoing issues should be minimized. • Very little administrative support is available in the departments surveyed 		
<p><u>Recommended Action(s)</u></p> <p>The policy on appointing technical staff will be reviewed completely to address the above issues.</p>		<p><u>Responsibility</u></p> <p>OSD and Heads of departments <u>(“A”)</u></p>	<p><u>Target Date</u></p> <p>Feb 28, 2015</p>
<p>Action No. 23</p>	<p><u>Gap identified: Leadership</u></p> <ul style="list-style-type: none"> • An integrated, long-term approach should be taken to staff planning and recruitment, having regard to the future direction of the university and of the departments in terms of the shift of focus required by contemporisation. 		

	<ul style="list-style-type: none"> • Seniority should not be the only factor when making leadership appointments. • Undue reliance on seniority as a factor in decision-making, including the allocation of teaching duties where senior staff seem to have the first choice. • There is no university strategic plan that provides for an integrated approach to development across education and research. 		
<u>Recommended Action(s)</u> The University will develop a comprehensive strategic plan for the next 5 years covering teaching, research, students and infrastructure development.		<u>Responsibility</u> Director & Associate Dean Strategy <u>("A")</u>	<u>Target Date</u> March 31, 2015
Action No. 24	<u>Gap identified: Senate</u> <ul style="list-style-type: none"> • Senate academic committees are overly burdened by routine administration, that could be more efficiently discharged by the Department Head. • Publish university academic regulations that provides for variation across departments. These regulations would be updated annually and would take into consideration recommendations for revision and additions arising from academic developments in that academic year. • Provide allowance for greater academic freedom in the design and revision of courses; these revisions should be discussed and agreed at the local academic department level. • Empower the local department level committees to make routine decisions for the betterment of the programme within the university's published regulations. 		
<u>Recommended Action(s)</u> Make Department committee(s) empowered with many powers now resting with senate committees and DoAA and COE offices. Proposed by DoAA in consultation with all heads and to be reviewed at PMB / Senate.		<u>Responsibility</u> DOAA, Heads of Departments & Registrar <u>("A")</u>	<u>Target Date</u> End Feb 2015
Action No. 25	<u>Gap identified: Senate Research Committee</u> <ul style="list-style-type: none"> • Establish a Senate research committee as a third academic committee of the Senate. Frame terms of reference of the three committees of to oversee the implementation of the university's strategies in respect of education and research. 		
<u>Recommended Action(s)</u> A new academic body named as Senate Research Committee (SRC) will be created. All consultancy and research activity will be reviewed by this committee. All Heads, Deans		<u>Responsibility</u> Director, Dean RSP and DOAA	<u>Target Date</u> Jan 30, 2015

and Departmental nominees will be the member of this committee.		<u>(“A”)</u>	
Action No. 26	<u>Gap identified: Research Office</u> Set up a well-resourced, inward and outward facing Research Office that engages with national and international funding bodies and industry, and supports academic staff in identifying funding and intellectual property opportunities and in the administration of grant and IP applications.		
<u>Recommended Action(s)</u> A new Research Office with adequate staff will be created under the Chairmanship of Dean, RSP. A competent person having R&D experience will be appointed to act as an interface with the funding bodies. He will also guide the faculty for such activities. Under this centre a Patent help cell will be created.		<u>Responsibility</u> Director & Dean RSP <u>(“A”)</u>	<u>Target Date</u> April 30, 2015
Action No. 27	<u>Gap identified: Teaching Practice and Staff Development Unit</u> <ul style="list-style-type: none"> • The planned expansion and the necessary change in culture requires the establishment of an in-house Teaching Practice and Staff Development Unit <ul style="list-style-type: none"> – To promote new and more efficient teaching methods; – To support the transition to a learning outcomes and research-led approach; – To monitor quality assurance and support quality enhancement in teaching, learning and research; – To train new members of academic staff, teaching assistants and technical staff; – To support on-going staff development and staff planning. 		
<u>Recommended Action(s)</u> We will establish the Teaching Practice and Staff Development Unit initially to be manned by TCD staff and supported by a senior faculty at TU who would eventually take over these activities. Will seek more information about this unit during the visit of the heads of the departments to TCD during the next term.		<u>Responsibility</u> Director LMTSOM <u>(“A”)</u>	<u>Target Date</u> June 30, 2015
Action No. 28	<u>Gap identified: Library & Support Services</u> <ul style="list-style-type: none"> • Improve collection of books. • Design small-group learning spaces for project and group work within the Library and to transform the library into a 21st century, information-age centre of excellence. 		

<p><u>Recommended Action(s)</u></p> <ul style="list-style-type: none"> • Process for procurement of books already initiated. • Nava Nalanda Central Library has been allocated some additional space. This space shall be utilized for creating learning spaces for project and group work immediately. 	<p><u>Responsibility</u></p> <p>Head Central Library <u>(“A”)</u></p>	<p><u>Target Date</u></p> <p>March 31, 2015</p>
<p>Action No. 29</p>	<p><u>Gap identified: Civil Engineering</u> The reports from the internship programme are not strong and in most cases the value added by the internship to the undergraduate programme is unclear. The internship is not correlated to the programme outcomes and there is no clear link between the internship and the material covered in the courses; for example, many internships are construction-site based whereas the B.E. emphasises analysis and design.</p>	
<p><u>Recommended Action(s)</u></p> <p>Department will revise the curriculum to incorporate some construction specific courses</p> <p>Identify more project semester slots in design organisations and create a cell for this</p>	<p><u>Responsibility</u></p> <p>Head CED <u>(“A”)</u></p>	<p><u>Target Date</u></p> <p>July 31, 2015</p>
<p>Action No. 30</p>	<p><u>Gap identified: Civil Engineering</u></p> <ul style="list-style-type: none"> • The choice of courses and project topics is not linked to the areas of expertise of the staff. • Absence of a major individual final year project in the B.E. programme 	
<p><u>Recommended Action(s)</u></p> <p>Department will increase the credits of major final year project</p> <p>Will ensure that the faculty members to take up projects as per their expertise.</p>	<p><u>Responsibility</u></p> <p>Head CED <u>(“A”)</u></p>	<p><u>Target Date</u></p> <p>July 31, 2015</p>
<p>Action No. 31</p>	<p><u>Gap identified: Civil Engineering</u></p> <ul style="list-style-type: none"> • The practice of allowing M.E. students to identify their own research project topics reduces the opportunities for individual staff to develop their own research activity and profile. • The quality of PG intake is mixed and this is reflected in the performance/attainment of the students on exit. • Place more rigorous control on the entry standard of PG students 	
<p><u>Recommended Action(s)</u></p> <p>Department will ask faculty members to circulate the research topics well in advance and</p>	<p><u>Responsibility</u></p>	<p><u>Target Date</u></p>

DPPC will make sure of this continuous improvement is being done for the admitting good quality PG students, as this year (2014) 80% seats are filled by GATE students		Head CED (“A”)	July 31, 2015
Action No. 32	<u>Gap identified: Civil Engineering</u> <ul style="list-style-type: none"> Pursue alternative and innovative teaching methods. These methods could include self-directed learning, project work, term papers, reading assignments and the use of IT learning resources. Link the topics covered in courses and projects more closely to the research and professional expertise of staff members. 		
<u>Recommended Action(s)</u> Department will make efforts to achieve this; however rigorous faculty training is required to achieve this.		<u>Responsibility</u> Head CED (“A”)	<u>Target Date</u> July 31, 2015
Action No. 33	<u>Gap identified: Civil Engineering</u> <ul style="list-style-type: none"> Greater use of numerical models and engineering software should be encouraged in both the UG and PG programmes (both courses and projects). 		
<u>Recommended Action(s)</u> This will be taken up and more numbers of software pertaining to civil engineering will be procured and high end computing facility will be created. However sufficient funds are required to meet out this.		<u>Responsibility</u> Head CED (“A”)	<u>Target Date</u> During 2015-16 will apply for sufficient funds to achieve this
Action No. 34	<u>Gap identified: Civil Engineering</u> Diversify the subjects taught in PG programmes by partnering with School of Energy and Environment.		
<u>Recommended Action(s)</u> At present few Ph.D. and Master students are working with School of Energy and Environment and Department Electronics Engineering. More faculty members and students will be encouraged to start new activities in association with these departments		<u>Responsibility</u> Head CED (“A”)	<u>Target Date</u> July 31, 2015
Action No. 35	<u>Gap identified: Examinations</u> <ul style="list-style-type: none"> Students must achieve some minimum standard to pass. Some students perform very poorly (<20%) on an exam paper and still appear to pass due to the grading system being used. Similarly, the average exam marks in some subjects are unusually low. 		

<u>Recommended Action(s)</u> To maintain the better standards of the program, some minimum pass marks are required for each course. It is collective efforts of the faculty of that program. As per the educational boards and universities, the minimum pass mark of any course should be 35. The academic staff will be advised to moderate the question papers to accommodate all students. The grades of the courses should be discussed in the DPPC/SPPC before finalizing and submitting. A detailed regulation will be prepared for wider discussions and for approval of the competent authority.		<u>Responsibility</u> COE and Heads of the Departments <u>(“A”)</u>	<u>Target Date</u> March 31, 2015
Action No. 36	<u>Gap identified: Civil Engineering</u> <ul style="list-style-type: none"> • Collaboration with national and international universities is essential. • The improvement of international experience/ exposure for staff and research students should be achieved by providing <ul style="list-style-type: none"> – Regular sabbatical leave – Research visits and conference attendance – Establish UG exchange programmes as an elective alternative to industrial internships. 		
<u>Recommended Action(s)</u> The department will promote these activities during the next semester.		<u>Responsibility</u> Head CED <u>(“A”)</u>	<u>Target Date</u> Jan 31, 2015
Action No. 37	<u>Gap identified: Academic & Research Staffing – Civil Engineering</u> <ul style="list-style-type: none"> • Additional faculty to maintain and improve the staff-student ratios and to provide academic time to develop internationally-relevant research expertise. • Number of full-time PhD students needs to be increased 		
<u>Recommended Action(s)</u> Department will try to attract good faculty members and faculty members of the department will visit various IITs to induct Research Scholars in the department. Department proposes to provide attractive fellowships to attract good quality Ph.D. students.		<u>Responsibility</u> Head CED <u>(“A”)</u>	<u>Target Date</u> March 31, 2015
Action No.	<u>Gap identified: Technical Staffing – Civil Engineering</u>		

38	Continuous programme of professional and technical skills development should be established for technical staff.		
Recommended Action(s) Technical manpower in the department has to be increased. This requires serious attention from HR section of the university. Proper guidelines are to be framed for recruitment of technical manpower. Department will identify the training needs of the technical staff and impart these at appropriate intervals.		Responsibility Head CED & OSD (“A”)	Target Date March 31, 2015
Action No. 39	Gap identified: Infrastructure – Civil Engineering <ul style="list-style-type: none"> • Facilities are adequate to support B.E. and M.E. programmes, but significant upgrades are required in some laboratories . • Most teaching and laboratory spaces are in need of redecoration and maintenance. • Facilities for the load-testing of structures and structural elements are very limited in structural engineering laboratory. 		
Recommended Action(s) Fund allocation and proper space allocation are required to meet out this deficiency Visit of faculty members to TCD and other universities will help in finalisation of such upgradation.		Responsibility Head CED (“A”)	Target Date Will commence from Financial year 2015-16 and will be completed in three years
Action No. 40	Gap identified: Infrastructure – Civil Engineering <ul style="list-style-type: none"> • Very good experimental research ongoing in the field of construction material durability is not reflected by the laboratory facilities where this activity takes place; these are distributed over a few separate spaces, none of which are well equipped with bench spaces, storage, etc. • Facilities for computational research (software and hardware) are limited; needs upgradation. 		
Recommended Action(s) Department will integrate and try to locate such specialty at one location. Space and suitable manpower is required to maintain such facility.		Responsibility Head CED (“A”)	Target Date July 31, 2015
Action No. 41	Gap identified: Computer Science – Research <ul style="list-style-type: none"> • To improve in the ranking, the department needs to shift its focus towards research • Majority of the PhD students being part-time. Encourage the recruitment of full time research students; • The facilities consist of a single room equipped with standard PC workstations which also serves as a office and 		

	laboratory space as well as a seminar room. <ul style="list-style-type: none"> • Encourage the emergence of Research Groups; • Dedicated laboratory space to Research Groups – these could also be used to support research-led undergraduate teaching; 	
<p><u>Recommended Action(s)</u></p> <p>Only Full Time students are being admitted from 2013 Dec Admissions.</p> <p>All PhD students and ME students should get scholarship equivalent to given in IITs so that good students can be attracted.</p> <p>Need Lab space. It has been requested.</p> <p>Research Groups will be strengthened. Research Groups were formed earlier also (There has been slow progress also), but due to lack of space and research time it could not take the required shape. Research groups in the department have consistently raised the need for different Research Specific Labs which can also be used by BE, ME and PhD students working in those related research groups. Group Publications should be encouraged instead of dividing by number of authors.</p>	<p><u>Responsibility</u></p> <p>Head CSED <u>(“A”)</u></p>	<p><u>Target Date</u></p> <p>Already Done</p> <p>-----</p> <p>Well formed Research Groups by Jun 2015</p>
<p>Action No. 42</p>	<p><u>Gap identified: Computer Science – Research Publications</u></p> <ul style="list-style-type: none"> • Staff are focussed on producing SCI publications to meet the necessary criteria for promotion. • Despite the quoted impact factors, these journals are often quite obscure. • Conference publication is targeted mostly at local Indian events, due largely to the paucity of travel funding. 	
<p><u>Recommended Action(s)</u></p> <p>Separate funds for ME, PhD students to travel abroad for Conferences/CPD may be made available. Processes should be made easy and simplified and may be decentralized for such routine activities by the staff.</p> <p>Students and Staff are being consistently pushed to publish in the top most journals and we will continue it further.</p> <p>There is a specific issue in CS that the technology is changing at unexpected speed, and</p>	<p><u>Responsibility</u></p> <p>Head CSED <u>(“A”)</u></p>	<p><u>Target Date</u></p> <p>----</p> <p>Continuous</p>

<p>this shift is being catered by many World class conferences and New journals by many top publishers. So this needs to be taken into account.</p> <p>SCI is also maintaining a SCI-Conference Indexing, which is not recognized in TU. So it should be considered equivalent to SCI Journal publishing.</p>		----
<p>Action No. 43</p>	<p><u>Gap identified: Computer Science – Research</u> Little evidence of a clustering of staff interests or of a strategy to aim to be a world-class centre in any particular area.</p>	
<p><u>Recommended Action(s)</u> There has been few attempts where such proposals have been sent to funding agencies. Getting big funds from funding agencies is an issue. We will further accelerate such attempts.</p> <p>Research groups as given in previous points.</p>	<p><u>Responsibility</u> Head CSED <u>(“A”)</u></p>	<p><u>Target Date</u> Dec 2015</p>
<p>Action No. 44</p>	<p><u>Gap identified: Computer Science</u> Staff should have timely access to small amounts of funding for equipment and expenses associated with projects.</p>	
<p><u>Recommended Action(s)</u> Staff should have timely access to small amounts of funding for equipment and expenses associated with projects.</p> <p>Uniformity and enhanced amount of PDA (along with procedural issues in spending the PDA) should be available and also separate fund in the department for UG/PG projects.</p> <p>One time seed money can be given for flourishing of research groups and can be measured with some outcome based rubrics.</p>	<p><u>Responsibility</u> Head CSED <u>(“A”)</u></p>	<p><u>Target Date</u> From next financial year</p>
<p>Action No. 45</p>	<p><u>Gap identified: Academic & Research Staffing – Computer Science</u></p> <ul style="list-style-type: none"> • Faculty recruitment to reduce the already-high student to staff ratio and to allow for planned expansion. • Change the existing recruitment criteria to widen the pool of potential new academic staff. • Consideration should be given to attracting people working in related industry who may not have an established academic record. 	

	<ul style="list-style-type: none"> Review existing promotion criteria to reward staff who is active in research and teaching. Reduce dependence on short-term contract staff. 		
<u>Recommended Action(s)</u>	<p>The policy on staff hiring and promotions will be reviewed before the next round of faculty selections. We shall work for this in consultation with Unit Heads for proposing different norms for the persons from Industry. Additionally,</p> <ul style="list-style-type: none"> (i) Grievances of individual faculty pending from many years should be listened and closed either way on case by case basis (ii) Internal Promotions should have a different framework and number of levels should be reduced (iii) Technical Staff (System Analyst) should have access to PDA for professional development. 	<u>Responsibility</u>	<u>Target Date</u>
		DOFA & Head CSED <u>("A")</u>	15 JAN 2015
Action No. 46	<u>Gap identified: Academic & Research Staffing – Computer Science</u> <ul style="list-style-type: none"> Plan for staff development by facilitating and funding conference travel and sabbatical leave. Encourage and fund all staff access to CPD programmes. 		
<u>Recommended Action(s)</u>	<ul style="list-style-type: none"> ➤ We shall have uniform PDA to all faculty members, and can also institute a corpus in University for such funding. ➤ This shall be done more effectively. 	<u>Responsibility</u>	<u>Target Date</u>
		DOFA & Head CSED <u>("A")</u>	15 JAN 2015
Action No. 47	<u>Gap identified: Infrastructure – Computer Science</u> <ul style="list-style-type: none"> Number of conventional computer laboratories with general Cs and printers, and a separate Networks Laboratory. The machines have small screens and are packed tightly together in the laboratories. Replace the machines in laboratories with up-to-date, well specified machines. Ensure special-purpose software (e.g. MATLAB, etc.,) is kept up to date. The laboratories themselves are in need of maintenance and decoration. Expand the number of laboratories to facilitate true self-directed and self-paced learning. Provide well-equipped special purpose computer laboratories 		
<u>Recommended Action(s)</u>	<p>Proposal was submitted to the Committee for upgradation. Waiting for Four Labs to be operational with furniture and equipment in place.</p>	<u>Responsibility</u>	<u>Target Date</u>
		Head CSED	During next financial year

<p>More funds and space for special purpose Research laboratories. New Programs require special labs with state of the art labs. Additional funding to be made available for innovative and upcoming infrastructure which will also help in producing new start-ups and entrepreneurship. Faculty offices are being shared, separate offices may be made available.</p>	<p><u>(“A”)</u></p>	
<p>Action No. 48</p>	<p><u>Gap identified: Infrastructure – Computer Science</u></p> <ul style="list-style-type: none"> • Internet connectivity experienced by the Trinity party was very patchy. • Evaluate and consider upgrading the network capabilities within the laboratories and teaching areas generally and also between the university and the Internet. 	
<p><u>Recommended Action(s)</u> Data Centre and Network Operation Centre’s network back-bone will be provisioned for 10G connectivity. It will be budgeted in year 2015.</p> <p>Planned expansion is chalked out and within span of two years; we will have state-of-the-art network facility and ERP offerings at TU campus.</p>	<p><u>Responsibility</u> Head CITM <u>(“A”)</u></p>	<p><u>Target Date</u> Financial Year 2015-16</p>
<p>Action No. 49</p>	<p><u>Gap identified: Curriculum – Computer Science</u></p> <ul style="list-style-type: none"> • need to teach <i>smarter</i> – which means teaching less, teaching larger groups, having more student project work and not attempting to cover every corner of the discipline in lectures • Staff are attempting to be generalists, to cater for almost any topic and to teach and supervise in diverse area 	
<p><u>Recommended Action(s)</u></p> <ul style="list-style-type: none"> • To use Learning Management Systems • Classrooms to have more sophisticated technology • To reduce Teaching Load and Class Hours for Students to result in more time for group and project work • Staff has to take 4-5 ME students every year to cater to all three branches of ME and the proportional strength of each specialization does not match, which results in research outputs loosely related to the Core specialization. 	<p><u>Responsibility</u> Head CSED <u>(“A”)</u></p>	<p><u>Target Date</u> July 2015</p>
<p>Action No. 50</p>	<p><u>Gap identified: Infrastructure – Computer Science</u></p> <ul style="list-style-type: none"> • Course content appears unnecessarily rigid; content should be allowed to evolve naturally and should not require 	

	approval at Senate level		
	<p><u>Recommended Action(s)</u> Review of whole scheme and course content will be undertaken between jan – May 2015. All suggestions made by the TCD review team will be incorporated.</p> <p>The academic regulations will be reviewed so that minor content changes can be made locally within the department.</p>	<p><u>Responsibility</u> Head CSED <u>(“A”)</u></p>	<p><u>Target Date</u> May 31, 2015</p>
<p>Action No. 51</p>	<p><u>Gap identified – Computer Science</u> The programme is missing a whole section on embedded systems. There is no modern assembly language, such as ARM; students get no exposure to modern embedded devices such as the Raspberry Pi.</p>		
	<p><u>Recommended Action(s)</u> It is currently being taught as part of the old scheme. New scheme (only 1st year) is passed by Senate. It will be included in the new scheme also as an Elective. Lab space will be required for this course. Services of the Electronics Engg Department will be used for effective teaching</p>	<p><u>Responsibility</u> Head CSED <u>(“A”)</u></p>	<p><u>Target Date</u> Immediately</p>
<p>Action No. 52</p>	<p><u>Gap identified – Computer Science</u> BE industry projects are not well executed even though they are highly valued by the students; we would expect them to be of a higher standard; there is a missed opportunity here.</p>		
	<p><u>Recommended Action(s)</u> In Computer Science 80% (140) students are given pre-employment offer for training with stipend, which does not leave much room to dictate to the company about the work to be assigned to the student and many times those projects are not even fully shared due to IPR issues. In some cases we are showing this as our strength. We will review the project semester learning outcomes after having wider discussions with all stake holders. Currently alternate semester is only being taken by students having backlogs. Due to increase in strength we need to explore other opportunities like project semester done at International Universities, Incubation Opportunities, Alternate Skill training on the campus.</p>	<p><u>Responsibility</u> Head CSED <u>(“A”)</u></p>	<p><u>Target Date</u> Review to be completed by Feb 28, 2015</p>
<p>Action No.</p>	<p><u>Gap identified – Computer Science</u></p>		

53	<ul style="list-style-type: none"> • Introduction of a Capstone Project is a step in the right direction, but it should have higher credits (e.g. 16-20 credits); • The project should be investigative and have a research element rather than a simple implementation. • The timing of the capstone project and industry placement should be swapped. 	
<p><u>Recommended Action(s)</u> Capstone project was supposed to be of higher credit, but was limited to four in SUGC due to overall credits and limits. We will work towards increasing the number of credits.</p> <p>Project Semester cannot be moved to 6th Semester due to the issues for which it was moved to 8th Semester</p>	<p><u>Responsibility</u> Head CSED <u>("A")</u></p>	<p><u>Target Date</u> May 31, 2015</p>
<p>Action No. 54</p>	<p><u>Gap identified – Computer Science</u></p> <ul style="list-style-type: none"> • Stringent requirement for postgraduate students to have a paper accepted in SCI journals – We suggest that students be required to prepare a paper so that it could be submitted, but that it be evaluated internally. 	
<p><u>Recommended Action(s)</u> SCI is only desirable and has not been in practice as yet. Papers are being evaluated internally also.</p>	<p><u>Responsibility</u> Head CSED <u>("A")</u></p>	<p><u>Target Date</u> Immediately</p>
<p>Action No. 55</p>	<p><u>Gap identified: Electronics & Communication Engineering</u></p> <ul style="list-style-type: none"> • Standard of intake to the PG programmes is not as high. • The PG students hold degrees from small Colleges from different Indian states, and the average quality is not high. 	
<p><u>Recommended Action(s)</u> May not be true for ECED, as all our PG entrants are GATE qualified. Perhaps ECED is performing the best as far as the PG entrants are concerned, because we are taking students with very high GATE score.</p>	<p><u>Responsibility</u> Head ECED <u>("A")</u></p>	<p><u>Target Date</u></p>
<p>Action No. 56</p>	<p><u>Gap identified: Electronics & Communication Engineering- Curriculum</u></p> <ul style="list-style-type: none"> • The structure of courses is inflexible and the assessment is often repetitive. • Careful thought should be given to streamlining the assessment of courses in the programs with the goal of removing unnecessary repetition and reducing teaching load. • The department should, where possible, offer courses jointly across programmes and avoid unnecessary duplication. 	

<u>Recommended Action(s)</u> We are very closely working on the ECE course schemes both at the UG and PG level.		<u>Responsibility</u> Head ECED <u>("A")</u>	<u>Target Date</u> May 31, 2015
Action No. 57	<u>Gap identified: Electronics & Communication Engineering- Curriculum</u> <ul style="list-style-type: none"> • The levels and standard of project work in the UG is much less developed. • Standard of the minor project and industrial internship reports are below what would be expected of a student in their fourth year. 		
<u>Recommended Action(s)</u> We have taken this point very positively and we will try our best to improve upon this point.		<u>Responsibility</u> Head ECED <u>("A")</u>	<u>Target Date</u> May 31, 2015
Action No. 58	<u>Gap identified: Electronics & Communication Engineering- Curriculum</u> <ul style="list-style-type: none"> • Revisit the idea of an integrated 5 year Masters programme. • Initiate a streamlined procedure that allows staff to offer PhD studentships to talented Masters students without having to go through the usual application procedure, that is to transfer to the PhD programme rather than having to re-apply. 		
<u>Recommended Action(s)</u> We are starting a new UG programme titled "Electronics and Computer engineering" in line with what TCD is running also. Perhaps this programme could be the better choice for a 5 year integrated programme. We will make efforts to offer a 5 year dual degree program within the regulations of the University. This programme can also be developed with TCD under the collaboration efforts.		<u>Responsibility</u> Head ECED <u>("A")</u>	<u>Target Date</u> Jan 31, 2015
Action No. 59	<u>Gap identified: Electronics & Communication Engineering- Curriculum</u> The involvement of the Computer Science and Engineering Department is strongly recommended in the proposed Electronic and Computer Engineering programme		
<u>Recommended Action(s)</u> We are already following this idea. We called the heads of computer engineering department and CITM in BoS that was scheduled to be held last month but it was postponed for the TCD review. Now it will be soon held.		<u>Responsibility</u> Head ECED & Head CSED <u>("A")</u>	<u>Target Date</u> Jan 31, 2015

Action No. 60	<u>Gap identified: Electronics & Communication Engineering - Curriculum</u>		
	<ul style="list-style-type: none"> The department should make it possible to switch between undergraduate programmes at as late a stage of the programme as possible. 		
<u>Recommended Action(s)</u>		<u>Responsibility</u>	<u>Target Date</u>
A review of academic regulations may be necessary. Will forward this for further action by DoAA so that a comprehensive University wide policy can be formulated.		Head ECED <u>("A")</u>	Jan 31, 2015
Action No. 61	<u>Gap identified: Electronics & Communication Engineering - Collaboration</u>		
	<ul style="list-style-type: none"> There is almost no collaboration either with industry or other Indian institutions. 		
<u>Recommended Action(s)</u>		<u>Responsibility</u>	<u>Target Date</u>
We will work more rigorously to meet the targets and requirements regarding collaboration with the industry.		Head ECED <u>("A")</u>	Jan 31, 2015
Action No. 62	<u>Gap identified: Electronics & Communication Engineering – Publications</u>		
	<ul style="list-style-type: none"> Two academic staff have published in internationally respected journals, namely, IEEE etc. Most of the other publications are in Journals published in Kidwai. Staff should be encouraged to publish their research work in high impact factor Journals. 		
<u>Recommended Action(s)</u>		<u>Responsibility</u>	<u>Target Date</u>
This point needs clarification as there are many people who have published IEEE journals and proceedings. I don't also understand the meaning of Kidwai. Our emphasis will remain on high impact factor journals.		Head ECED <u>("A")</u>	Jan 31, 2015
Action No. 63	<u>Gap identified: Electronics & Communication Engineering</u>		
	<ul style="list-style-type: none"> Encourage faculty to apply for research grants. Freeing time from laboratories teaching and marking and administration will allow this. 		
<u>Recommended Action(s)</u>		<u>Responsibility</u>	<u>Target Date</u>
A comprehensive review of academic work loads is being undertaken at the University level as discussed in some of the earlier points.		<u>("A")</u>	See Action Point 1
Action No. 64	<u>Gap identified: Electronics & Communication Engineering</u>		
	<ul style="list-style-type: none"> Staff should give regular seminars of relevance to ECE to the students on their research work/expertise. They should give a flavour of research to the undergraduates and postgraduates. 		

	<ul style="list-style-type: none"> • Research students should be encouraged to attend at least two conferences in the area of their specialty. • Seminars from experts should be encouraged. The department could start by inviting experts from other Indian Universities and Institutes of Technology. 		
<u>Recommended Action(s)</u>	We do undertake these activities and there is a need to pursue these more aggressively. We will develop targets to monitor such academic activities.	<u>Responsibility</u>	<u>Target Date</u>
		Head ECED <u>("A")</u>	Jan 31, 2015
Action No. 65	<u>Gap identified: Electronics & Communication Engineering</u> <ul style="list-style-type: none"> • The senior to junior ratio of academic staff in the Department is skewed and it needs to be increased • A grading system should be introduced for each of the relevant requirements of the university. This will give transparency to the system of promotions. • There should also be a relaxation in the criteria for hiring academic staff. • Research interest and output should play a bigger role in the recruitment process provided an academic is also an effective teacher. 		
<u>Recommended Action(s)</u>	<ul style="list-style-type: none"> ➤ ECED Ratio 1+3 : 3 : 23 (SP+P : Assoc P:AsstP), CAS is an option here. The faculty selection norms are being looked into for this. ➤ Grading for Teaching / Publication / Project is considered for PIS. The same can be extended for promotions of academic staff. ➤ This is being considered please. ➤ This shall be considered in the selection process, please. 	<u>Responsibility</u>	<u>Target Date</u>
		DOFA & Head ECED <u>("A")</u>	Before the next round of faculty selections.
Action No. 66	<u>Gap identified: Electronics & Communication Engineering</u> <ul style="list-style-type: none"> • Introduce Teaching Assistants to help the laboratory work to reduce the workload and allow research prioritisation by academic staff. • More technical staff needs to be hired and a career development and promotion policy introduced. • There should be a training programme for the Technicians as the technology in ECE is changing rapidly. • Staff at the Assistant Professor grade and above should be given individual offices. 		
<u>Recommended Action(s)</u>	We are putting teaching assistants in labs and tutorials. The number and quality of technical staff will be enhanced in consultation with the	<u>Responsibility</u>	<u>Target Date</u>
		Head ECED	May 31, 2015

<p>OSD. We will develop a training program for technical staff. Provision of individual offices at all cadres will be implemented as soon as more rooms are made available.</p>	<p><u>("A")</u></p>	
<p>Action No. 67</p>	<p><u>Gap identified: Electronics & Communication Engineering</u></p> <ul style="list-style-type: none"> • Adequate resources need to be provided for the maintenance and upgrading of equipment and space. For example, the PCs in the DSP laboratory are quite old and consideration should be given to upgrading them. • Any expansion in the number of programmes will require extensive upgrading of the existing infrastructure. • Provision for the development of lecture theatres that accommodate 200+ students is necessary. This will help reduce the total amount of teaching time for individual courses. 	
<p><u>Recommended Action(s)</u> We will prepare a detailed plan that was presented to the committee to upgrade and modernize these facilities.</p>	<p><u>Responsibility</u> Head ECED <u>("A")</u></p>	<p><u>Target Date</u> Jan 31, 2015</p>
<p>Action No. 68</p>	<p><u>Gap identified: Mechanical Engineering</u></p> <ul style="list-style-type: none"> • Preventing the persistent re-sitting of failed examinations, with the intention that undergraduates may not be allowed to backlog first and second year courses into their final year. 	
<p><u>Recommended Action(s)</u> Policy to be framed centrally. Will be discussed with the concerned authorities to formulate a policy in this regard.</p>	<p><u>Responsibility</u> Head MED <u>("A")</u></p>	<p><u>Target Date</u> May 31, 2015</p>
<p>Action No. 69</p>	<p><u>Gap identified: Mechanical Engineering</u></p> <ul style="list-style-type: none"> • The examiners do not appear to meet together as an Exam Board to consider overall performance of undergraduates or postgraduates. • Some students perform very poorly (<20%) on an exam paper and still appear to pass due to the grading system being used. Similarly, the average exam marks in some subjects are unusually low. 	

<p><u>Recommended Action(s)</u> An examination board will be constituted in the department. This board will also include external experts (1 expert per program). The board will meet 10 days after the last day of examination and will review the situation before grading. Change in academic regulation is required. To maintain the better standards of the program, some minimum pass marks are required for each course. It is collective efforts of the faculty of that program. As per the educational boards and universities, the minimum pass mark of any course should be 35.</p>	<p><u>Responsibility</u> Head MED & COE <u>(“A”)</u></p>	<p><u>Target Date</u> May 2015</p>
<p>Action No. 70</p>	<p><u>Gap identified:Mechanical Engineering</u></p> <ul style="list-style-type: none"> Automating the attendance thereby relieving some of the pressure on lecture time 	
<p><u>Recommended Action(s)</u> Biometric system is to be introduced for the attendance of students. To be automated using biometrics.</p>	<p><u>Responsibility</u> DOAA &Head MED <u>(“A”)</u></p>	<p><u>Target Date</u> Shall be implemented from next semester. Agenda item shall be placed in next PMB meeting.</p>
<p>Action No. 71</p>	<p><u>Gap identified:Mechanical Engineering</u></p> <ul style="list-style-type: none"> Reduce the contact time and review the content of the undergraduate course. Review the necessity to retain courses where there is no real staff expertise particularly in the undergraduate years 3 and 4 and Masters level. Vigorously pursue innovative teaching methods which can maintain or improve quality whilst reducing actual student contact hours. 	
<p><u>Recommended Action(s)</u> The following is proposed (will be taken up for wider discussions within the University). Total 18 weeks of semester will include 14 weeks of class room teaching, 1 week of study recess/study related travel, 1 week of MST and 2 weeks of EST. The 14 weeks of class room teaching is closer to TCD’s practice of 12 weeks of class room teaching (and similar to other institutes of national repute, such as IITs). Faculty travelling/on-leave on academic work will not need to reschedule classes. Curriculum is to be reviewed to include project based teaching (research-based projects</p>	<p><u>Responsibility</u> Head MED and DoAA <u>(“A”)</u></p>	<p><u>Target Date</u> May 2015 shall be implemented centrally if approved by senate</p>

are to be introduced in laboratories).			
Individual subject based laboratory project work will commence from January 2015.			
Action No. 72	<u>Gap identified:Mechanical Engineering</u> <ul style="list-style-type: none"> In mathematics in first year and numerical methods in second year, enhance syllabus with practical examples from engineering problems where appropriate. 		
<u>Recommended Action(s)</u> A committee has been formed with Dr. T.K.Bera, Dr. S.S.Mallick, Mr. R.K.Duvedi, who will provide practical applications/examples to the curriculum (formed and run by SMCA) regarding the of use of mathematical/numerical methods to solve mechanical engineering problems.		<u>Responsibility</u> Head MED <u>("A")</u>	<u>Target Date</u> May 31, 2015
Action No. 73	<u>Gap identified:Mechanical Engineering</u> Avoid transcription of procedures in laboratory programmes, allowing time for more reflection and critical analysis.		
<u>Recommended Action(s)</u> The laboratory work will include either module-based laboratory project or individual subject based project. Conventional experiments will be covered in the initial 4-6 weeks. This will be followed the projects. The students will have to do about 2 experiments per week in the initial 4-6 weeks. This will include mostly reporting the results and analysis. Transcription of procedures shall be minimized. Also, the students will have to submit proper computer prints of project reports.		<u>Responsibility</u> Head MED <u>("A")</u>	<u>Target Date</u> January 31, 2015
Action No. 74	<u>Gap identified:Mechanical Engineering</u> <ul style="list-style-type: none"> Expose the undergraduates to research through some specialist modules more directly aligned with research interests of staff. 		
<u>Recommended Action(s)</u> This will be achieved through the module/individual subject-based projects (see point no. 73). Faculty members are advised to introduce their research areas to 4th semester students w.e.f. next semester.		<u>Responsibility</u> Head MED <u>("A")</u>	<u>Target Date</u> January 31, 2015
Action No.	<u>Gap identified:Mechanical Engineering</u>		

75	<ul style="list-style-type: none"> Review the actual learning outcomes associated with the industry internship and their role in completing the overall programme outcomes. 		
<u>Recommended Action(s)</u> The learning outcomes will be aligned to the learnings from industrial internships.		<u>Responsibility</u> Head MED <u>("A")</u>	<u>Target Date</u> May 31, 2015
Action No. 76	<u>Gap identified:Mechanical Engineering</u> <ul style="list-style-type: none"> Emphasise more the use of high-level computer coding (Matlab/Scilab) for solving problems and presenting data Introduce some CAD studies which address Heating and Ventilation design/visualisation applications. Link design projects where possible to upgrading components in both teaching and research rigs. Small budgets should be available for use in these projects. 		
<u>Recommended Action(s)</u> Dr. Ashish Singla will purchase MATLAB by August 2015. Course content will be reviewed to to introduce the CAD studies in Heating and Ventilation design/visualisation applications. We will budget to fund small student projects.		<u>Responsibility</u> Head MED <u>("A")</u>	<u>Target Date</u> August 31, 2015 May 31, 2015 April 30, 2015
Action No. 77	<u>Gap identified:Mechanical Engineering</u> <ul style="list-style-type: none"> Increase retention of Thapar undergraduates, for example, targeted scholarships or entry into the ME programme for high performing Thapar undergraduates. 		
<u>Recommended Action(s)</u> Fellowships to be provided to UG students to take up ME registration at par with GATE students. Will be taken up for wider discussions and policy formulation at the University level.		<u>Responsibility</u> Head MED and DoAA <u>("A")</u>	<u>Target Date</u> July 31, 2015
Action No. 78	<u>Gap identified:Mechanical Engineering</u> <ul style="list-style-type: none"> Staff PhD programmes where started must be facilitated to be completed as it will increase further capacity to support new (full time) PhD students 		
<u>Recommended Action(s)</u>		<u>Responsibility</u>	<u>Target Date</u>

The department will facilitate such staff. 90% of staff doing PhD will complete PhD by 2017.		Head MED (“A”)	December 2017
Action No. 79	<u>Gap identified:Mechanical Engineering</u> <ul style="list-style-type: none"> Scholarships consistent with strategic research plans should be pursued. Increasing numbers of PhD students should be used to reduce the teaching load on academic staff. 		
<u>Recommended Action(s)</u> A policy needs to be framed at the University level. The following is proposed. Provide PhD scholarships as follows: @24,000 p.m. for in first year @26,000 p.m. in second year @28,000 for third and fourth year		<u>Responsibility</u> Head MED, DoRSP (“A”)	<u>Target Date</u> January 31, 2015
Action No. 80	<u>Gap identified:Mechanical Engineering</u> <ul style="list-style-type: none"> The capacity to introduce modelling type projects which do not require experimental rigs or which are associated with present experimental facilities should be explored. 		
<u>Recommended Action(s)</u> Faculty to balance experimental work with modelling work.		<u>Responsibility</u> Head MED (“A”)	<u>Target Date</u> Ongoing and to be enhanced
Action No. 81	<u>Gap identified:Mechanical Engineering</u> <ul style="list-style-type: none"> Attendance at international conferences should be facilitated and encouraged (in addition to journal publications). 		
<u>Recommended Action(s)</u> The following is proposed at the University level. PDA is to be increased to 1 lakh/year (for all cadres). Publication in international ASME and IEEE conferences to be counted for rewards.		<u>Responsibility</u> Head MED and DoFA (“A”)	<u>Target Date</u> January 31, 2015
Action No. 82	<u>Gap identified:Mechanical Engineering</u> <ul style="list-style-type: none"> Communication/soft training and modules must be continually developed to ensure that publications, communications and network building in matters of research are seen to be at the highest professional standards. Develop strategic plan to include measures to address lack of retention of the high quality undergraduate student 		
<u>Recommended Action(s)</u>		<u>Responsibility</u>	<u>Target Date</u>

<p>The “research methodology” course will be taught by DME faculty – this will include relevant statistical inputs for mechanical type research, research steps, academic English writing, presentation skill etc. This course will be taken by all PG and PhD students (mandatory).</p>	<p>Head MED (“A”)</p>	<p>July 31, 2015</p>	
<p>Action No. 83</p>	<p><u>Gap identified: Mechanical Engineering</u></p> <ul style="list-style-type: none"> • Prioritise spending on instrumentation to enhance the present teaching rigs. • Review all spaces and devise a strategy for simple maintenance, decoration and lighting. • Review safety issues and general procedures in the laboratories. 		
<p><u>Recommended Action(s)</u> Procurement of instrumentation based on modules will commence from next financial year. Safety manuals are to be read and proper protocol is to be implemented.</p>		<p><u>Responsibility</u> Head MED (“A”)</p>	<p><u>Target Date</u> April 30, 2015</p>
<p>Action No. 84</p>	<p><u>Gap identified: Mechanical Engineering</u> Non-operating machines (unless they are being reconditioned) should be removed to storage and space should be continued to be reallocated to research rigs as required.</p>		
<p><u>Recommended Action(s)</u> This process has been already initiated.</p>		<p><u>Responsibility</u> Head MED (“A”)</p>	<p><u>Target Date</u> Ongoing</p>
<p>Action No. 85</p>	<p><u>Gap identified: Mechanical Engineering</u></p> <ul style="list-style-type: none"> • Development of strategies on software management. 		
<p><u>Recommended Action(s)</u> AMC of softwares shall continue.</p>		<p><u>Responsibility</u> Head MED (“A”)</p>	<p><u>Target Date</u> April 2015</p>
<p>Action No. 86</p>	<p><u>Gap identified: Mechanical Engineering</u></p> <ul style="list-style-type: none"> • Present support for extracurricular (technical and non-technical) activities should be nurtured and new activities (e.g., design challenges) encouraged. 		

<u>Recommended Action(s)</u> More activities of these types are to be planned and held. Faculty members heading various societies will submit the list of activities by January 2015.		<u>Responsibility</u> Head MED <u>("A")</u>	<u>Target Date</u> January 31, 2015
Action No. 87	<u>Gap identified: Mechanical Engineering</u> <ul style="list-style-type: none"> Review promotion criteria to ensure that staff who are making significant contributions in both teaching, research and project leadership are rewarded. Ensure that mechanisms exist to allow all views to be heard by department and higher management. 		
<u>Recommended Action(s)</u> The present process of promotion shall be reviewed at the University level. Fast track accelerated promotion for outstanding achievers and career advancement schemes are to be implemented before the next selection process.		<u>Responsibility</u> Head MED and DoFA <u>("A")</u>	<u>Target Date</u> January 31, 2015.
Action No. 88	<u>Gap identified: Mechanical Engineering</u> Institute a mentorship programme for junior academic staff to be facilitated by research-active senior staff.		
<u>Recommended Action(s)</u> This process is ongoing, but to be further enhanced.		<u>Responsibility</u> Head MED <u>("A")</u>	<u>Target Date</u> Ongoing
Action No. 89	<u>Gap identified: Mechanical Engineering</u> <ul style="list-style-type: none"> Appropriate training and CPD for all staff is essential. Appropriately trained technical staff 		
<u>Recommended Action(s)</u> Staff will be periodically sent for training, especially those involved with design in coming winter and summer vacations.		<u>Responsibility</u> Head MED <u>("A")</u>	<u>Target Date</u> December 31, 2014
Action No. 90	<u>Gap identified: Mechanical Engineering</u> <ul style="list-style-type: none"> Administration loads must be reviewed and procedures/regulations which may have served well in the past should also be reconsidered at this time. 		
<u>Recommended Action(s)</u> This will be considered in teaching load allocation for the semester starting.		<u>Responsibility</u> Head MED	<u>Target Date</u> July 31, 2015

		<u>("A")</u>	
Action No. 91	<u>Gap identified: Mechanical Engineering</u> <ul style="list-style-type: none"> • Encourage staff to travel in general to international conferences and teaching workshops. • There should be a system of sabbatical leave. 		
<u>Recommended Action(s)</u> Point on PDA has been already mentioned. The system of sabbatical is to be implemented in the right spirit. Policy to be formulated at the University level.		<u>Responsibility</u> Head MED and DoFA <u>("A")</u>	<u>Target Date</u> January 31, 2015.

