

TEERTHANKER MAHAVEER UNIVERSITY

FACULTY OF ENGINEERING

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SELF ASSESSMENT REPORT (SAR)

B.Tech. Computer Science & Engineering (B.Tech. CSE)

FOR ACCREDITATION OF UNDERGRADUATE ENGINEERING PROGRAMME (TIER-I) FIRST TIME

SUBMITTED TO

NATIONAL BOARD OF ACCREDITATION

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(October, 2021)

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FACULTY OF ENGINEERING

SELF ASSESSMENT REPORT(TIER - I) FOR Computer Science & Engg.

Part A : Institutional Information

1 Name and Address of the Institution

FACULTY OF ENGINEERING,
NH-24, DELHI ROAD, MORADABAD, UTTAR PRADESH-244001, INDIA

2 Name and Address of Affiliating University

3 Year of establishment of the Institution:

2008

4 Type of the Institution:

○ Institute of National Infortance	○ Autonomous
○ University	○ Any other(please specify)
○ Deemed University	

5 Ownership Status:

○ Central Government	☐ Trust
○ State Government	☐ Society
○ Government Aided	☐ Section 25 Company
◉ Self financing	☐ Any Other(Please Specify)

6 Other Academic Institutions of the Trust/Society/Company etc., if any

Name of Institutions	Year of Establishment	Programs of Study	Location
College of Fine Arts	2011	BFA, MFA	Moradabad
Faculty of Education	2003	BEd, MEd, BA, BSc, BEIEd	Moradabad
TMIMT College of Physical	2011	BPEd, MPEd, PGDYEd, Ph	Moradabad
College of Agricultural Scie	2014	BSc, MSc	Moradabad
Center of Jain Studies	2008	BA, MA, Ph.D	Moradabad
Medical College and Resea	2008	MBBS, MD, MS, MSc, Ph.D	Moradabad
Dental College and Researc	2005	BDS, MDS, Ph.D	Moradabad
College of Nursing	2009	ANM, GNM, BSc, MSc, Ph.	Moradabad
College of Pharmacy	2008	DPharm, BPharm, MPharm	Moradabad
College of Paramedical Sci	2010	DMLT, Diploma, D.Optomet	Moradabad
Department of Physiotherap	2010	DPT, BPT, MPT	Moradabad
TMIMT College of Manager	2001	BBA, MBA, BCom, Ph.D	Moradabad
College of Law and Legal S	2010	BALLB, BBALLB, BCom, Pl	Moradabad
College of Computing Scier	2001	BCA, MCA, BSc, Ph.D	Moradabad
Faculty of Engineering	2008	BTech, BSc, MSc, Ph.D	Moradabad
University Polytechnic	2008	Diploma	Moradabad

7 Details of all the programs being offered by the Institution under consideration:

Name of Program	Program Applied level	Start of year	Year of AICTE approval	Initial Intake	Intake Increase	Current Intake	Accreditation status	From	To	Program for consideration	Program for Duration
B.TECH-COMPUTER SCIENCE & ENGINEERING	UG	2008	2008	60	No	60	Applying first time	--	--	Yes	4
B.TECH. - MECHANICAL ENGINEERING	UG	2008	2008	60	No	60	Not eligible for accreditation	--	--	No	4
B.TECH. - CIVIL ENGINEERING	UG	2008	2008	60	No	60	Not eligible for accreditation	--	--	No	4
B.TECH. - ELECTRICAL ENGINEERING	UG	2008	2008	60	No	60	Not eligible for accreditation	--	--	No	4
B.TECH. - ELECTRONICS AND COMMUNICATION ENGINEERING	UG	2008	2008	60	No	60	Not eligible for accreditation	--	--	No	4

8 Programs to be considered for Accreditation vide this application:

S No	Level	Discipline	Program
1	Under Graduate	Engineering & Technology	Computer Science & Engg.

13

9 Total number of employees

A. Regular* Employees (Faculty and Staff):

Items	2020-21		2019-20		2018-19	
	MIN	MAX	MIN	MAX	MIN	MAX
Faculty in Engineering (Male)	67	67	56	56	61	61
Faculty in Engineering (Female)	10	10	8	8	7	7
Faculty in Maths, Science & Humanities teaching in engineering program (Male)	14	14	13	13	13	13
Faculty in Maths, Science & Humanities teaching in engineering program (Female)	4	4	3	3	3	3
Non-teaching staff (Male)	12	12	12	12	12	12
Non-teaching staff (Female)	12	12	12	12	12	12

B. Contractual* Employees (Faculty and Staff):

Items	2020-21		2019-20		2018-19	
	MIN	MAX	MIN	MAX	MIN	MAX
Faculty in Engineering (Male)	0	0	0	0	0	0
Faculty in Engineering (Female)	0	0	0	0	0	0
Faculty in Maths, Science & Humanities teaching in engineering Programs (Male)	0	0	0	0	0	0
Faculty in Maths, Science & Humanities teaching in engineering Programs (Female)	0	0	0	0	0	0
Non-teaching staff (Male)	0	0	0	0	0	0
Non-teaching staff (Female)	0	0	0	0	0	0

10 Total number of Engineering students:

Engineering and Technology- UG	☑ Shift1	☐ Shift2
Engineering and Technology- PG	☐ Shift1	☐ Shift2
Engineering and Technology- Polytechnic	☐ Shift1	☐ Shift2
MBA	☐ Shift1	☐ Shift2
MCA	☐ Shift1	☐ Shift2

Engineering and Technology- UG Shift-1

Course Name	2020-21	2019-20	2018-19
Total no. of Boys	433	506	577
Total no. of Girls	81	95	98
Total	**514**	**601**	**675**

11 Vision of the Institution:

To be recognized as institute of excellence, promoting value based education in computer science and engineering with multidisciplinary research, innovation and consultancy services to the society.

12 Mission of the Institution:

- To provide holistic education through outcome based learning.
- To promote inter disciplinary learning and research that will serve the needs of entire global community.
- To inculcate innovation in graduates using technological advancements for the development of computational solutions.
- To prepare graduates to be continuous learners by inculcating people skills.

13 Contact Information of the Head of the Institution and NBA coordinator, if designated:

Head of the Institution	
Name	Prof. Rakesh Kumar Dwivedi
Designation	Principal
Mobile No.	9639266555
Email ID	dir.engg@tmu.ac.in

☑ **NBA Coordinator, If Designated**

Name	Prof. R. C. Tripathi
Designation	Professor
Mobile No.	9868257510
Email ID	tripathi.computers@tmu.ac.in

PART B: Criteria Summary

Critera No.	Criteria	Total Marks	Institute Marks
1	VISION, MISSION AND PROGRAM EDUCATIONAL OBJECTIVES	50	50.00
2	PROGRAM CURRICULUM AND TEACHING - LEARNING PROCESSES	100	100.00
3	COURSE OUTCOMES AND PROGRAM OUTCOMES	175	175.00
4	STUDENTS' PERFORMANCE	100	85.33
5	FACULTY INFORMATION AND CONTRIBUTIONS	200	174.00
6	FACILITIES AND TECHNICAL SUPPORT	80	80.00
7	CONTINUOUS IMPROVEMENT	75	75.00
8	FIRST YEAR ACADEMICS	50	47.32
9	STUDENT SUPPORT SYSTEMS	50	50.00
10	GOVERNANCE, INSTITUTIONAL SUPPORT AND FINANCIAL RESOURCES	120	120.00
	Total	**1000**	**956**

Part B : Criteria Summary

1 VISION, MISSION AND PROGRAM EDUCATIONAL OBJECTIVES (50)

Total Marks 50.00

1.1 State the Vision and Mission of the Department and Institute (5)

Total Marks 5.00

Institute Marks : 5.00

Vision of the institute	To be recognized as institute of excellence, promoting value based education in computer science and engineering with multidisciplinary research, innovation and consultancy services to the society.
Mission of the institute	• To provide holistic education through outcome based learning. • To promote inter disciplinary learning and research that will serve the needs of entire global community. • To inculcate innovation in graduates using technological advancements for the development of computational solutions. • To prepare graduates to be continuous learners by inculcating people skills.
Vision of the Department	To be recognized as department of excellence, promoting value-based education in computer science and engineering with multidisciplinary research, innovation and consultancy services to the society.
Mission of the Department	

Mission No.	Mission Statements
M1	To provide value-based education by implementing outcome-based teaching and learning process.
M2	To promote inter disciplinary research that will serve the needs of entire global community.
M3	To inculcate desire for innovation in graduates using technological advancements for the development of effective solutions.
M4	To prepare graduates as continuous learners by inculcating professional skills and ethical responsibilities.

1.2 State the Program Educational Objectives (PEOs) (5)

Total Marks 5.00

Institute Marks : 5.00

PEO No.	Program Educational Objectives Statements
PEO1	Fundamental- To prepare the graduates for career and proficiency in Computer Science and Engineering.
PEO2	Industry ready- To imbibe technical and aptitude skills related to Computer Science and Engineering to offer best solution to industrial and societal problems.
PEO3	Continuous learning- To prepare graduates for pursuing higher education and life long learning.
PEO4	Entrepreneurship Skills- To imbibe entrepreneurial, leadership and effective communication and Business skills through innovation, incubation and start-up activities.
PEO5	Social responsibilities & Ecological impact- To develop awareness among the students about the various social responsibilities related to Engineering ethics, human values and ecological awareness.

1.3 Indicate where the Vision, Mission and PEOs are published and disseminated among stakeholders (15)

Total Marks 15.00

Institute Marks : 15.00

1.3.1 The Vision, Mission and PEOs are adequately published as indicated below

- Principal Office
- HoD Office
- Faculty members cabin
- Department Notice Board
- Respective Department floors
- Institute Website
- Department prospectus
- Department placement brochure
- Department Magazine
- Department Newsletter
- Internship Letters
- E-mail signature
- Student's handbook
- SMART proceedings
- Classroom
- Corridor(s)

1.3.2 Dissemination of PEOs, PEOs are disseminated through

- Institute Website
- Department Library
- Department Laboratories
- Department Corridor
- HOD Chamber
- Staff Rooms
- Notice Boards

1.3.3 The awareness of Vision, Mission and PEOs are created among the internal and external stakeholders through

- ARC/BOS/BOF meetings
- Faculty Members
- Students
- Induction program for freshers
- Parent teacher meeting
- Alumni meet
- Placement drives
- Guest Lectures
- Festival Celebration activities
- Seminars/Workshops/Webinars

1.4 State the process for defining the Vision and Mission of the Department, and PEOs of the program (15)

Total Marks 15.00

Institute Marks : 15.00

Vision & Mission Framing Process:

The following steps describe the process for defining the Vision & Mission of the Department:

1. The Vision & Mission of the department are proposed by the Committee formed by the Principal of the college.
2. Committee comprises of the head of the department and Professors/Senior faculty members.
3. The committee calls the general meeting of all members of faculty and nominated students for wider deliberations.
4. The advisory board is formed for finalization of the Vision & Mission of the department based upon the committee recommendations. The advisory board comprises of the Principal, Head of the department, Senior faculty members, Management representative, Alumni, Industry/Academia representative, parents and students.
5. Subsequently the board members discuss and verify the consistency of the framed Vision & Mission with the institutional Vision & Mission.
6. The board finalizes the Vision & Mission after a careful deliberation during the meeting and the same is adopted by the college as well as by the department.



Figure 1.4.1 Process for defining the Vision and Mission of the department

Program Educational Objectives (PEOs) Framing Process:

The Program Educational Objectives (PEOs) are framed by the Department Advisory board after a careful consideration of feedbacks received from the internal and external stake holders.

The objective of the program is to produce globally competent Computer engineers possessing all round skills. This objective is divided into five subdivisions in such a way that may cover all required skills of graduates. These are as follows: Fundamentals, Core Competence, Logical & Analytical reasoning, Communication Skill and Continual Learning. The advisory board frames PEOs in-line with the above said requirements. Subsequently the alignment of the framed PEO is verified with the vision & mission of the department. Finaly accepted version of PEO will be published through all regular modes of dissemination.

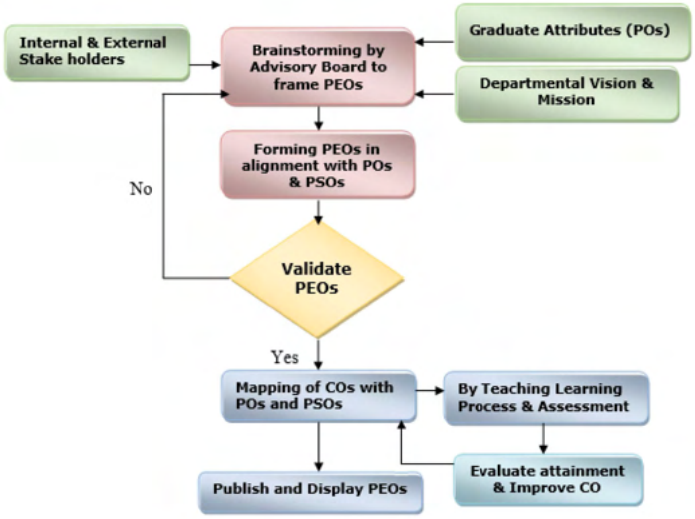


Figure 1.4.2 Process for framing PEO

1.5 Establish consistency of PEOs with Mission of the Department (10)

Total Marks 10.00

Institute Marks : 10.00

Justification for PEOs mapping with Mission:

PEO	PEO Statement	Mission	Level of Mapping	Justification
PEO1 (Fundamental)	*To prepare the graduates for career and proficiency in computer science and engineering.*	M1	3	The department has well qualified faculty members and they cater students with solid subject knowledge through holistic outcome based teaching-learning Process.
		M2	1	The faculty in the department motivate students towards interdisciplinary learning and research to realize their potential.
		M3	3	The department has student chapters of IEEE & CSI to organize and manage various collaborative activities.
		M4	-	-
PEO2 (Industry ready)	*To imbibe Computer Science & Engineering related technical and aptitude skills to offer optimal solution to industrial and societal problems.*	M1	2	The department conducts summer training program(s) and industrial visits that provide insights and hands on experience to the students for solving real life applications.
		M2	2	The department is participating in national level events such as Smart India Hackathon (July 2020) and Toycathon (June 2021).
		M3	3	The department has state of art virtual labs that help faculty and students in innovation and research, as a result of which research papers and patents are published at national and international level.
		M4	2	The department has well established CTLD department that help in developing professional and personal skills of the students.
PE03 (Continuous learning)	*To prepare graduates for pursuing higher education and research in Computer Science & Engineering.*	M1	-	-
		M2	3	By continuous learning and professional activities, the students are able to perform Research & Development activities with ethical knowledge.
		M3	2	The department has a regular practice to train students for national level exam like GATE, CAT etc.
		M4	2	The department conducts various motivational events to enrich students personality and behavioral skills.
PE04 (Entrepreneurship skills)	*To imbibe entrepreneurial, leadership and effective communication skills through innovation, incubation and startup activities.*	M1	2	The department focuses in conducting webinar and workshop in regular intervals to make the students aware of ongoing new practices and techniques.
		M2	2	The department has established IIC cell which conduct various innovation based activities/events like technical webinar, FDP, etc.
		M3	2	The department has proceeded with various industrial collaborations such as Google, NVIDIA, IBM etc.
		M4	-	-
PE05 (Social responsibilities & Ecological impact)	*To develop awareness among the students about the various social responsibilities related to Engineering ethics and human values with ecological impact.*	M1	2	Computer Science & Engineering graduates will be engaged in professional activities with ethical practices and human values to enhance their societal skills.
		M2	-	-
		M3	-	-
		M4	3	Ethical skills with professional communication are being offered for life long perspective.

PEO Statements	M1	M2	M3	M4
Fundamental- To prepare the graduates for career and proficiency in Computer Science and Engineering.	3	1	3	-
Industry ready- To imbibe technical and aptitude skills related to Computer Science and Engineering to offer best solution to industrial and societal problems.	2	2	3	2
Continuous learning- To prepare graduates for pursuing higher education and life long learning.	-	3	2	2
Entrepreneurship Skills- To imbibe entrepreneurial, leadership and effective communication and Business skills through innovation, incubation and start-up activities.	2	2	2	-
Social responsibilities & Ecological impact- To develop awareness among the students about the various social responsibilities related to Engineering ethics, human values and ecological awareness.	2	-	-	3

2 PROGRAM CURRICULUM AND TEACHING - LEARNING PROCESSES (100)

Total Marks 100.00

2.1 Program Curriculum (30)

Total Marks 30.00

2.1.1 State the process for designing the program curriculum (10)

Institute Marks : 10.00

The development of an effective curriculum is a multi-step, ongoing and cyclical process. The process progresses from evaluating the existing program, to designing an improved program, to implementing a new program and back to evaluating the revised program. Curriculum is designed and developed to ensure excellence in the quality in a systematic manner which provides a learner centric education as per the following flow chart in Figure 2.1.1 followed by the major steps.

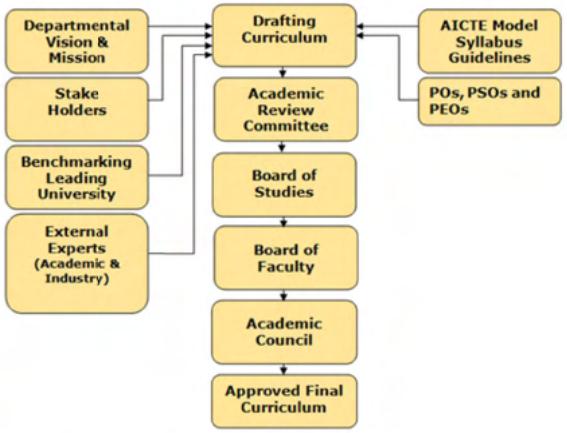


Figure 2.1.1 Program Curriculum Design Process

The Process is expained stepwise as below:

Step-1: First, **Academic Review Committee** (ARC, as-per below given structure) prepares the draft curriculum based on the following:

- Department Vision and Mission
- Program Educational Objectives
- Inputs obtained from stakeholders
- Inputs from external expert academicians
- Conclusions drawn from analysis of POs and PSOs
- Benchmarking of curriculum against same/ similar program(s) run by leading educational institutions including IITs, NITs, Best Private and Foreign Universities.
- Guidelines of AICTE/ UGC

ARC Structure & ARC 2019 to 2021

(a) ARC Structure

Table 2.1.1.1 ARC Structure

SNO	Rank	Affiliation	Designation (ARC)
1	Director/ Principal [Professor]	Internal	Chairperson
2	Professors/ Associate Professors/ Head	Internal	Members
3	All Faculty, more than 10 years of experience is also the member of ARC.	Internal	Members

(b) ARC 2019 to 2021

Table 2.1.1.2 ARC 2019 to 2021

SNO	Person[Rank]	Affiliation	Designation (BoS)
1	Dr. R. K. Dwivedi, Professor, Principal	FoE [Internal]	Chairperson
2	Dr. Ashendra Kumar Saxena Dr. Shambhu Bhardwaj Dr. Shakti Kundu Dr. Rajeev Kumar Dr. Arpit Jain Dr. Parag Agarwal Dr. Laxmi Kant Tiwari Mr. Priyank Singhal Ms. Anu Sharma Mr. Rupal Gupta Mr. Pradeep Kumar Gupta Mr. Jyoti Ranjan Labh Mr. Ajay Rastogi Ms. Swati Vishnoi Mr. Pradeep Kumar Shah Mr. Abhilash Saxena	FoE[All Internal]	Members
3	All Faculty, more than 10 years of experience is also the member of ARC.	FoE [All Internal]	Members

Step-2: Conduct **Board of Studies** (BoS, as-per below given structure) meeting to discuss the draft curriculum and recommend necessary changes.

BoS Structure & BoS 2019 to 2021

(a) BoS Structure

Table 2.1.1.3 BoS Structure

SNO	Rank	Affiliation	Designation (BoS)
1	Director/ Principal [Professor]	Internal	Chairperson
2	Professor from Govt./ Institute of Repute	External	Member

3	Professor/Associate Professor from Govt./ Institute of Repute	External	Member
4	All permanent Faculty of Institute/College	Internal	Members

(b) BoS 2019 to 2021

Table 2.1.1.4 BoS 2019 to 2021

SNO	Person[Rank]	Affiliation	Designation (BoS)
1	Dr. R. K. Dwivedi, Professor, Principal	FoE [Internal]	Chairperson
2	Dr. Raghuraj Singh, Professor	Dept. of CSE, HBTI, Kanpur [External]	Member
3	Dr. Vibhas Yadav, Associate Professor	Dept. of IT, REC, Banda	Member
4	All permanent Faculty of College	FoE [Internal]	Members

Step-3: Conduct **Board of Faculties'** (BoF) meeting to finalize the curriculum and syllabi.

BoF Structure & BoF 2019 to 2021

(a) BoF Structure

Table 2.1.1.5 BoF Structure

SNO	Rank / NOs	Affiliation	Designation (BoF)
1	Director/ Principal [Professor]/[1]	Internal	Chairperson
2	Director/ Principal [Professor]/[1]	External	Member
3	Professors/[4]	Internal	Members
4	Associate Professors/[16]	Internal	Members
5	Professors/ Heads/[6] from Govt./ Institute of Repute	External	Members

(b) BoF 2019 to 2021

Table 2.1.1.6 BoF 2019 to 2021

SNO	Person	Designation	Affiliation	Designation (BoF)
1	Dr. R. K. Dwivedi	Professor, **Principal**	FoE [Internal]	Chairperson
2	Dr. Amit Sharma	Professor, **Principal**	University Polytechnic, TMU, Moradabad	Member
3	Dr. Ravindra Komal Chand Jain Dr. K. A Gupta Dr. Bidyut Chatterjee Dr. R. C. Tripathi	Professors	FoE [Internal]	Members

4	Dr. Shri Prakash Pandey Mr, Manish Dhingra Dr. Navneet Kumar Dr. Varun Kumar Dr. Amit Sharma Dr. Ajay Upadhyay Dr. Alok Gahlot Dr. Vipin Kumar Dr. Pankaj Kumar Goswami Dr. Garima Goswami Mrs. Shakshi Singh Dr. Parag Agarwal Dr. Ashendra Kumar Saxena Dr. Ratan Pal Singh Rana Dr. Shakti Kundu Dr. Ajit Kumar	Associate Professor	FoE [Internal]	Members
5	Dr. Anup Chawla Dr. P.S. Mahar Dr. Sudha Arora Dr. S. D. Samantaray Dr. Kamal Jain Dr. Mohd. Sarosh Umar	Professo r/ Head	Dept of ME, IIT, Delhi Dept of CE, GBPant UniversitY,Pantnagar Dept of EE, GBPant UniversitY,Pantnagar Dept of CSE, GBPant UniversitY,Pantnagar Dept of CE, IIT, ROORKEE Dept of Comp. Engg., AMU **[All External]**	Members

Step-4: A post-BoF meeting to ensure the incorporation in curriculum and syllabi.

Step-5: Submit the final curriculum for approval of **Academic Council** (AC, as-per below given structure)

Academic Council (AC) Structure

Table 2.1.1.7 Academic Council AC Structure

SNO	Rank	Affiliation	Designation (AC)
1	Vice Chancellor	TMU[All Internal]	Chairperson
2	Pro-Vice Chancellor		Member
3	Registrar		Member Secretary
4	Dean Academics		Member
5	Directors/ Principals [Professors] from different University colleges		Members

6	Joint Registrar Academics		Special Invitee
7	Joint Registrar R & D		Special Invitee
8	Joint Registrar Governance		Special Invitee

2.1.2 Structure of the Curriculum (5)

Institute Marks : 5.00

ID	Course Code	Course Title	Lecture (L)	Tutorial (T)	Practical (P)	Total Hours	Theory Credits	Practical Credits	Total Credits
1	EAS116	Engineering Mathematics-I	3	1	0	4	4	0	4
2	EAS112	Engineering Physics	3	1	0	4	4	0	4
3	EEC111	Basic Electronics Engineering	3	1	0	4	4	0	4
4	TMU-101	Environmental Studies	2	1	0	3	3	0	3
5	TMUGE101	English Communication–I	2	0	2	4	3	0	3
6	EAS162	Engineering Physics (Lab)	0	0	2	2	0	1	1
7	EEE161	Basic Electrical Engineering (Lab)	0	0	2	2	0	1	1
8	EME162	Workshop Practice (Lab)	0	0	4	4	0	2	2
9	EAS211	Engineering Mathematics-II	3	1	0	4	4	0	4
10	EAS213	Engineering Chemistry	3	1	0	4	4	0	4
11	EEE217	Basic Electrical Engineering	3	1	0	4	4	0	4
12	ECS201	Computer Basics & C Programming	3	0	0	3	3	0	3
13	TMUGE201	English Communication–II	2	0	2	4	3	0	3
14	EAS263	Engineering Chemistry (Lab)	0	0	2	2	0	1	1
15	EEE261	Basic Electrical Engineering (Lab)	0	0	2	2	0	1	1
16	ECS251	Computer Basics & C Programming (Lab)	0	0	2	2	0	1	1
17	EME261	Engineering Drawing (Lab)	0	0	4	4	0	2	2
18	ECS305	Data Structure using C++	3	0	0	3	3	0	3
19	ECS306	Data Base Management System	3	0	0	3	3	0	3

20	EEC302	Digital Electronics & Computer Organization	3	0	0	3	3	0	3
21	EAS301	Mathematics-III	3	0	0	3	3	0	3
22	EAS303	Human Values & professional Ethics	2	0	0	2	2	0	2
23	ECS355	Data Structure using C++ (Lab)	0	0	4	4	0	2	2
24	ECS356	Data Base Management System (Lab)	0	0	2	2	0	1	1
25	EEC351	Digital Logic Circuit Lab	0	0	2	2	0	1	1
26	TMUGE301	English Communication–III	2	0	2	4	3	0	3
27	ECS401	Theory of Computation	3	0	0	3	3	0	3
28	ECS407	Java Programming	3	0	0	3	3	0	3
29	ECS404	Software Engineering	3	0	0	3	3	0	3
30	ECS405	Computer Based Numerical & Statistical Techniques	3	0	0	3	3	0	3
31	ECS406	Operating System	3	0	0	3	3	0	3
32	EHM403	Management Concepts & Organizational Behavior	2	0	0	2	2	0	2
33	ECS456	Java Programming (Lab)	0	0	4	4	0	2	2
34	ECS453	Computer Based Numerical & Statistical Techniques (Lab)	0	0	2	2	0	1	1
35	ECS455	OS Lab with Software Engineering (Lab)	0	0	2	2	0	1	1
36	TMUGE401	English Communication-IV	2	0	2	4	3	0	3
37	ECS511	Computer Architecture	3	0	0	3	3	0	3
38	ECS503	Analysis and Design of Algorithms	3	1	0	4	4	0	4
39	ECS510	Computer Network	3	0	0	3	3	0	3
40	ECS552	Analysis and Design of Algorithms (Lab)	0	0	2	2	0	1	1
41	ECS556	Python (Lab)	0	0	2	2	0	1	1
42	ECS591	Industrial Training	0	0	0	0	0	2	2
43	ECS555	Computer Network (Lab)	0	0	2	2	0	1	1
44	ECS559	MOOC Course	0	0	0	0	2	0	2
45	ECS601	Artificial Intelligence	3	1	0	4	4	0	4

46	ECS611	Data Warehousing and Data Mining with R- programming	3	0	0	3	3	0	3
47	ECS612	Mobile Communication	3	0	0	3	3	0	3
48	ECS651	Artificial Intelligence (Lab)	0	0	2	2	0	1	1
49	ECS654	Data Warehousing and Data Mining with R- programming (Lab)	0	0	2	2	0	1	1
50	ECS692	Seminar (Field Project)	0	0	0	0	0	2	2
51	FOE023	Entrepreneurship	3	0	0	3	3	0	3
52	ECS701	Web Technology (Design and Architecture Using .NET)	3	1	0	4	4	0	4
53	ECS703	Cryptography and Network Security	3	0	0	3	3	0	3
54	ECS709	Cloud Computing	3	0	0	3	3	0	3
55	ECS751	Web Technology (Design and Architecture Using .NET) (Lab)	0	0	4	4	0	2	2
56	ECS752	Cryptography and Network Security (LAB)	0	0	2	2	0	1	1
57	ECS791	Industrial Training - II	0	0	0	0	0	4	4
58	ECS799	Project Work Phase-1	0	0	8	8	0	4	4
59	OEC-I	OPEN ELECTIVE COURSE–I	3	0	0	3	3	0	3
60	EHM801	Project Management for Engineers	3	0	0	3	3	0	3
61	ECS812	Big Data Analytics	3	0	0	3	3	0	3
62	ECS855	Big Data Analytics (Lab)	0	0	2	2	0	1	1
63	ECS899	Project Work Phase- 2	0	0	12	12	0	6	6
64	OEC-II	OPEN ELECTIVE COURSE –II	3	0	0	3	3	0	3
65	PEC-I	Professional Elective Course-I	3	0	0	3	3	0	3
66	PEC-2	Professional Elective Course-II	3	0	0	3	3	0	3
67	PEC-3	Professional Elective Courses-III	3	0	0	3	3	0	3
68	PEC-4	Professional Elective Courses-IV (Lab)	0	0	2	2	0	1	1
69	PEC-5	Professional Elective Courses-V	3	0	0	3	3	0	3
70	PEC-6	Professional Elective Courses-VI	3	0	0	3	3	0	3
		Total	**119**	**10**	**82**	**211**	**135**	**45**	**180**

2.1.3 State the components of the curriculum (5)

Institute Marks : 5.00

Course Components	Curriculum Content (% of total number of credits of the program)	Total number of contact hours	Total number of credits
Basic Sciences	10.56	190.00	19
Engineering Sciences	6.11	110.00	11
Humanities and Social Scie	12.22	220.00	22
Program Core	31.67	570.00	57
Program Electives	8.89	160.00	16
Open Electives	3.33	60.00	6
Project(s)	3.33	6.00	6
Internships/Seminars	7.77	14.00	14
Any other (Please specify)	16.11	290.00	29
Total number of Credits			**180**

2.1.4 State the process used to identify extent of compliance of the curriculum for attaining the Program Outcomes and Program Specific Outcomes as mentioned in Annexure I (10)

Institute Marks : 10.00

Program Curriculum of BTech CSE Program is delivered through various teaching aids like Black Board, Projector, Online classes using Olympus Great Learning platform and Smart Classes. The Course Outcome Mapping is performed for each assessment with POs and PSOs with the curriculum. POs and PSOs attainment are calculated through the internal assessment, End term examinations, Alumni and final year student feedbacks. If the desired performance is not achieved, same is discussed in ARC meeting which may suggest for curriculum modifications that will be incorporated accordingly.

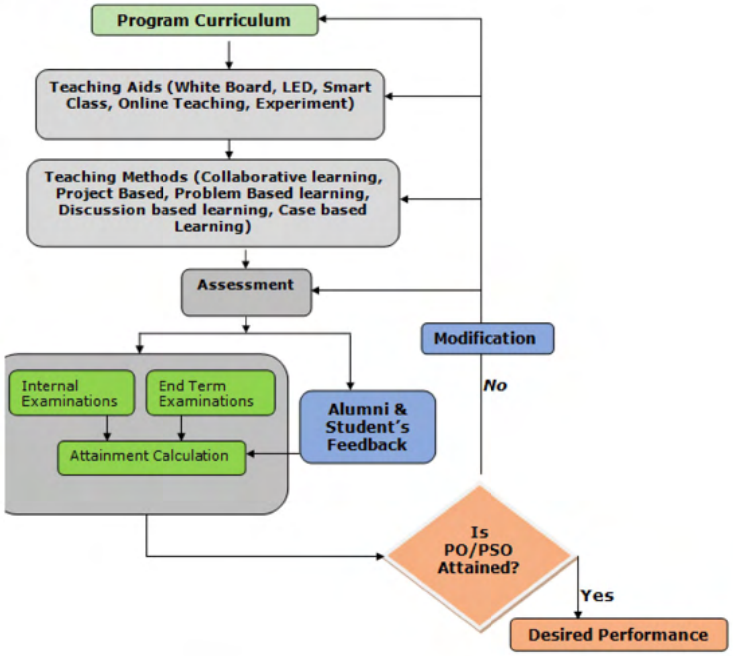


Figure 2.1.4 POs & PSOs Attainment Process

2.2 Teaching-Learning Processes (70) Total Marks 70.00

2.2.1 Describe Processes followed to improve quality of Teaching & Learning (15) Institute Marks : 15.00

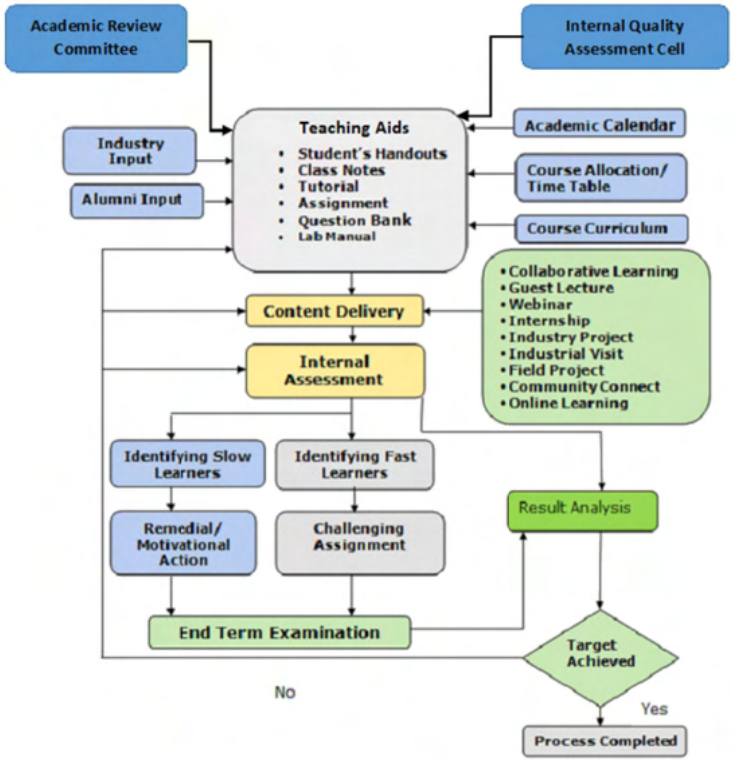


Figure 2.2.1.1 Process followed to improve quality of Teaching

a. **Academic calendar**

Academic calendar of university is prepared and circulated to the various institutes/departments. The department prepares the action plan for execution of major routine tasks to run the teaching/learning, evaluation and other academic activities smoothly within the stipulated time frame. The academic calendar contains the detailed schedule, instructions and actions to be followed in the department such as student registration, Academic activities including Webinar, Seminar, Conferences, Guest Lecture, schedule of CTs (Class Tests), end term examination, sports, Internship details and Summer/ Winter Vacations.

- Dates of registration for the new semesters
- Dates of commencement of academic session and last working day.
- The tentative dates of commencement of all the three class tests.
- Dates for submission of e-contents for new semester by the faculty members.
- Date of commencement of preparing time table for next semester.
- Tentative dates of commencement of University practical and theory end semester examinations.
- Schedule of conferences, FDPs. workshops, guest lecturers, industrial tours etc. organized by department.
- Dates of gazetted holidays

Teerthanker Mahaveer University
Faculty Of Engineering
Academic Calendar Session 2020-21

Applicable to :	Odd Semester		Even Semester	
	Events/Particulars	Dates/Periods	Events/Particulars	Dates/Periods
Second year/3rd Semester onwards	Commencement of classes: Second year/3rd Semester onwards	05.09.2020	Commencement of Even Semester classes	15.01.2021
	Course Allocation to faculty members	08.07.2020	Course Allocation for Even Semester	15.12.2020
	Submission of e-contents for odd semester for Website Upload	30.07.2020	e-contents for Even semester	05.01.2021
	Time-table formation for online classes	05.08.2020	Time table submission for Even	31.12.2020
All	Foundation Day	14.09.2020		
	Engineer's Day	15.09.2020		
Second year/3rd Semester onwards	CT-I (For second year/3rd Semester	12.10.2020-15.10.2020	CT-I (For second year/4th Semester	25.02.2021-27.02.2021
	CT-II (For second year/3rd Semester onwards)	11.11.2020, 12.11.2020 &	CT-II (For second year/4th Semester onwards)	26.03.2021,27.03.2021 & 05.04.2021,06.04.2021
	End of Odd semester classes except	12.12.2020	End of Even semester classes	3.05.2021
	CT-III (For second year/3rd Semester	14.12.2020-16.12.2020	CT-III (For second year/3rd	06.05.2021-08.05.2021
	Conduct of Odd End Semester Examinations except first year	17.12.2020-05.01.2021	Conduct of Even sem Examinations	10.05.2021-31.05.2021
			Summer vacations/Internship for 2,3r	01.06.2021-31.07.2021
	Commencement of Next Academic Sessi	2.08.2021		
All	Seminar/Conference/Webinars/ Guest Lectures	Civil- September 07,2020 EC-September 21,2020 EE-October 13, 2020 Mechanical-October 05, 2020 CS-November 16,2020	Seminar/Conference/Webinars/Guest Lectures	Civil-March 29,2021 EC- January 25, 2021 EE-March 22, 2021 Mechanical- Feb 08,2021 CS-March 10, 2021
	Other Major Events	BOS Meeting- 28 December 2020 BOF Meeting- 04 January 2021	Other Major Events	BOS Meeting- 05 July 2021 BOF Meeting- 12 July 2021
First Year	Commencement of classes for First	21.10.2020	Commencement of Even Semester clas	17.03.2021
	Course Allocation to faculty members	08.07.2020	Course Allocation for Even Semester	15.03.2021
	Submission of e-contents for odd semester for Website Upload	30.07.2020	Submission of e-contents for Even se	25.03.2021
	Time-table formation for online classes	05.08.2020	Time table submission for Even Semes	15.03.2021
	CT1 for First Semester	CT1 10.12.2020-5.12.2020	CT1 for First Semester	19.04.2021-21.04.2021
	CT2 for First Semester	CT2 15.01.2021,16,18.01.2021	CT2 for First Semester	19.05.2021-21.05.2021
	CT3 for First Semester	CT3 12.02.2021-15.2.2021	CT3 for First Semester	16.06.2021-18.06.2021
	End of odd semester classes for First	10.02.2021	End of odd semester classes for	15.06.2021
	Conduct of Odd End Semester Examinations of first year	16.02.2021-10.03.2021	Conduct of Even End Semester Examinations of first year	21.06.2021-10.07.2021
			Summer vacations/Internship for first	12.07.2021-11.08.2021
	Commencement of Next Academic Sessi	12.08.2021		

Figure 2.2.1.2 Academic Calendar

b. Use of various instructional methods and pedagogical initiatives

***Delivery of Lectures in Class rooms*:**

Faculty members in the department prepare subject handouts, question bank comprising previous question papers and teaching methods like smart class rooms, LCD projectors i.e., ICT Facilities and live demonstration of the subject contents using experimental based learning in labs. After delivering the contents we identify slow learners and arrange supporting activities for them.

1. Collaborative Learning:

Collaborative learning is the educational approach of using groups to enhance learning through working together. It provides Holistic education to the students in terms of Psychomotor skills, Cognitive Skills and Affective skills. In this minimum three learners work together to solve problems, complete tasks, or learn new concepts. It promotes learning from other's viewpoints, promotes listening to criticism and advice, develops public speaking and active listening skills and improves cooperation. The following methods are used for collaborative learning.

1. Power point presentations by every student
2. Quiz Competitions
3. Group Projects
4. Performing Laboratory experiments in a group

5. National level Workshops, Conferences and Short-term courses are organized in Association with Various Professional Societies.

2. Project based learning:

During the period of study , Projects are given to the students on the latest technologies and they are guided by faculty members. In the 7^{th} and 8^{th} semesters, a final year project is developed by a group of students. For some academic courses, students are encouraged to do some projects.

3. Real world Problems:

i. Exposing students to real world through examples

ii. Providing exposure to real world of engineering by taking students to nearby industries.

iii. Demonstration using models and charts for better subject understanding.

4. Expert Lectures:

Experts from Industries and renowned academic institutions are regularly invited to deliver Guest/Expert Lectures for our students.

5. Virtual Learning:

1. Virtual labs: Faculty members use virtual labs with the collaboration of IIT Kanpur to conduct some experiments of the respective labs. Instruction manuals about conduction of experiments are given in virtual labs, students follow these instruction materials to complete the experiments. There is no need to install latest softwares in the labs as different softwares and simulators are available in virtual labs.

2. Online teaching through Olympus Great Learning Portal & Zoom: Faculty members use softwares like mentioned software to take lectures, tutorials and labs online. In last semester, faculty members took classes online during lockdown period. Some faculty members also run their own created video lectures, Y ouTube videos during online lectures using online plateform.

c. Pedagogy to encourage bright students and assist weak students

(* It is assumed hereby that fast learner is bright student & slow learner is weak student)

Pedagogy to support weak students:

- Weak students are identified on the basis of the results of Class Test-1. The students are identified as slow learners if they score less than 50 % in each subject. Separate special classes are arranged for weak students after Class Test-1. These classes help in clarifying the doubts and re-explaining of difficult topics to such students.
- Regular monitoring of their progress is done by observing their performance in lectures, tutorials and labs. Students are provided with reading materials and notes to improve their understanding power.
- Parents are informed about the performance of their wards.
- A question bank based on the previous year's question papers is provided to the students for better preparation.
- Student mentors are also appointed for 15-20 students. These mentors monitor their progress regularly and guide them throughout the course. They also review student attendance in connection with performance and motivate them to attend classes and participate in co-curricular and extra curricular activities.

Pedagogy to assist bright students:

- The bright students are identified from their participation in classroom discussion, performance in the class tests, questioning ability and university result analysis. Awards and appreciation by the Director and university are extended to the bright students to perform better in the University examinations. They are felicitated time to time for their achievements.
- Special facilities are provided to all the bright students. For example, after evaluating the performance of Class Test-1, the top ten students of every section are provided additional facilities in the library.
- Bright students are encouraged to pursue various online courses such as MOOCs.
- They are encouraged to participate in conferences, workshop and symposiums. They are also motivated to publish technical papers in reputed conferences and journals.
- They are also encouraged to become university rank holders and also to write competitive exams like GATE, GRE, CAT, GMAT, TOEFL etc, for pursuing higher studies.
- Special training programs on IoT, Play with Python, Android, PHP, Data Science using Julia, CCNA are conducted for interested students.



Figure 2.2.1.3 Smart Class Room and Teacher Assisted Learning

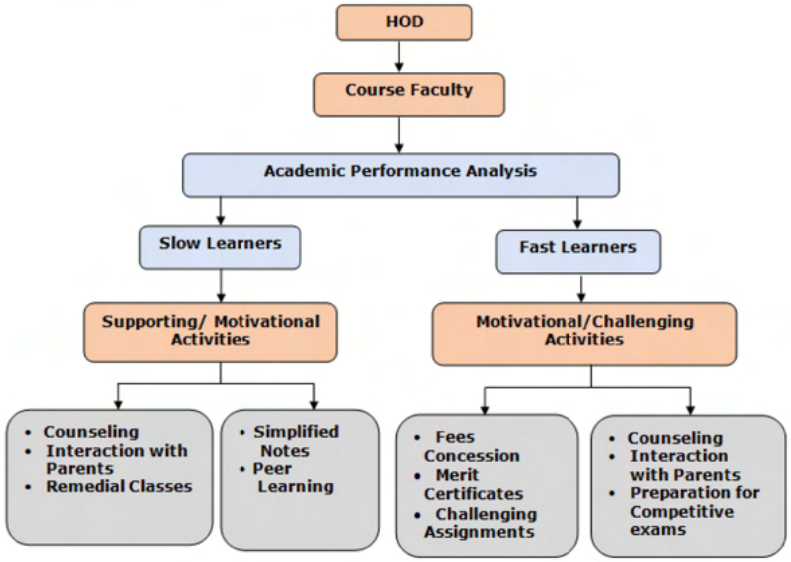


Figure 2.2.1.4 Process followed to improve quality of Learning

Impact Analysis of Methodology used for Bright and Weak students:

As a result of the above initiatives by the department, the following have been achieved

1. End Semester exam results improved

2. Students were appeared in NPTEL exams, attended workshops and also published papers in reputed conferences and journals.

d. **Quality of classroom teaching**

- Conducive learning ambiences in the classrooms are maintained through comfort seating arrangements, good ventilation with proper lighting and ICT facilities.
- The faculty members go to the classrooms on time; revise the previous class portions first and then ask questions from the previous day portions. Then they continue the new topic of syllabus.
- Smart classrooms are utilized to improve the teaching learning process.

e. Conduct of experiments

- All labs in the department are equipped with the enough number of computers with required software. All lab manuals are prepared well before the commencement of the semester.
- Each class is divided into two groups and same were sent in two separate laboratories.
- Individual student in each group gets assigned dedicated system in Computer Labs and in case of other labs a group of three students gets assigned a kit/apparatus for performing the experiments.
- At the starting of semester Lab assignments are provided to the students and they have to perform the assignments during the lab hours.
- Students individually do their experiments which provide good quality of laboratory experience.
- Students are advised to study the theory behind the experiments and the procedure to conduct the experiments before the lab session.
- Write up of the experiments done Viva-voce questions.
- Concern faculty member explains the experiment procedure.
- Students are advised to take help from the lab manuals.
- Faculty member monitors every student during conduction of experiments and also in recording of observations.
- Calculations and analysis of data as well as practical significance /application of the results obtained are done by students under the guidance of faculty member. The students are asked to submit the lab record for evaluation.
- Internal marks are allocated on the basis of- Execution of the experiments

f. Continuous assessment in the laboratory

- Continuous assessment system is also implemented for assessment of laboratory work. The assessment is done on the basis of- Laboratory records or File records
- After completion of first assignment, student's knowledge in the practical is tested and viva voce is also conducted.
- Regularity of the students in the laboratory Conduction of the experiments by the students
- Based on that practical outcome, the weak students are identified and a special session is conducted.
- ***Internal Lab Exam:*** An internal lab, exam of 2 hours duration is conducted after the completion of all the assignment to assess the ability of a student performance.
- ***End Term Examination:*** The end semester practical examination is conducted for 2-hour duration.

g. Industrial Training

- Students undergoes industrial training of six to eight weeks in any industry or reputed organization after the IV and VI semester examinations in summer. The evaluation of this training shall be included in the V and VII semester evaluation respectively.
- The student is assigned a faculty guide who would be the supervisor of the student. The faculty would be identified before the end of the IV and VI semester and shall be the nodal officer for coordination of the training.
- Students prepares an exhaustive technical report of the training during the V and VII semester which is duly signed by the officer under whom training has been undertaken in the industry/ organization. The covering format shall be signed by the concerned office in-charge of the training in the industry. The officer-in-charge of the trainee would also give his rating of the student in the standard University format in a sealed envelope to the Principal of the college.
- The student at the end of the V and VII semester presents his report of the training before a committee constituted by the Principal of the College which would comprise of at least three members comprising of the Department Coordinator, Class Coordinator and a nominee of the principal. The students guide would be a special invitee to the presentation. The seminar session shall be an open house session. The internal marks would be the average of the marks given by each member of the committee separately in a sealed envelope to the Principal.
- The marks by the external examiner would be based on the report submitted by the student. It will be evaluated by the external examiner and cross examination done of the student concerned.

h. Student feedback of teaching learning process and action taken

- A team of senior faculty members conducts the class committee meeting after a month of commencement of every semester, minimum of two class committee meetings are conducted in every semester.
- In the class committee meeting, the Class Representatives (CR) freely express the opinion about the course handling faculty members. If the students feel any inconvenience in any subject, the faculty members and the Head of the Department takes the necessary corrective measures.
- The feedback forms got filled by the students for each course collected thorough online by at the end of every semester.
- The principal consolidates and reviews the feedback through the senior professors. The faculties those who earn excellent feedback are appreciated and a review is conducted for the lower performed faculty members.

2.2.2 Quality of end semester examination, internal semester question papers, assignments and evaluation (15) Institute Marks : 15.00

The evaluation includes class tests, assignments and attendance. Internal and external exams are main medium for assessing whether all the COs are attained or not. Three class tests are conducted during the semester as per the Institute Academic Calendar. According to University guidelines, two best class test marks are considered. The students are informed with evaluation process during their orientation program itself. College forms a committee for the moderation of question papers, evaluation and effective process implementation. Individual question paper for each course is prepared by the faculty members and submitted to the Exam cell for further review and modratation. The committee member selects final copy based on the questions' quality and relevance to COs. This selected set is further reviewed by the committee of the department. Final paper is printed, one day prior to the scheduled class test to maintain the privacy issues.

The undergraduate program of the department is based on continuous evaluation system. Evaluation is done by the faculty member of the subject throughout the semester. Each subject contains three main components for evaluation:

- Class tests

- Assignments
- Attendance

a) Process for internal semester question paper setting and evaluation and effective process implementation.

- Three class tests are conducted by exam cell as per the schedule prescribed in the academic calendar in every semester.
- Faculty members are instructed to use blooms taxonomy to prepare the question papers in such a way to cover the prescribed syllabus and ensure the relevant course outcomes.
- The quality of the question paper is ensured by the Head of the Department/ Senior faculty members/Principal. If any question paper needs up gradation, the faculty is instructed to revise the question paper

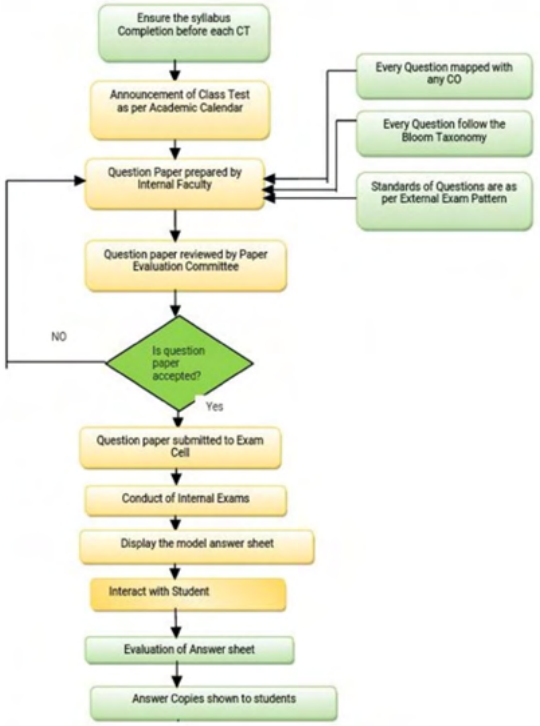


Figure 2.2.2.1 Process followed for Internal Assessment

b) Process to ensure questions from outcomes/ learning levels perspective

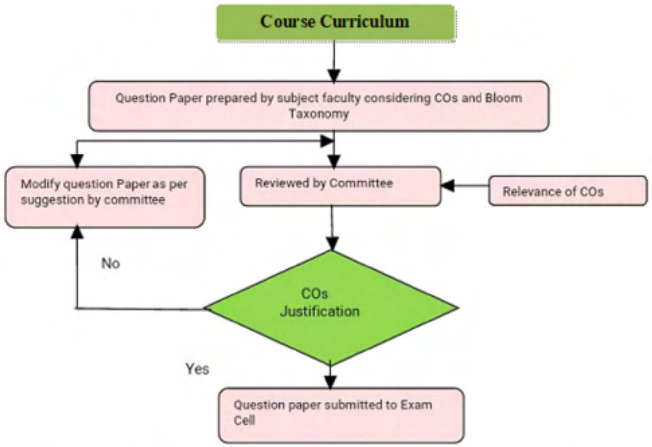


Figure 2.2.2.2 Process to prepare question paper as per Outcome Based Education (OBE)

2.2.2.1 ASSESSMENT PROCESS FOR COs ATTAINMENT

Course Outcome is evaluated based on the performance of students in internal assessments and in End Term assessment of a course. Internal assessment contributes 40% and End Term assessment contributes 60% to the total attainment of a CO.

Table 2.2.2.1 Format for Mapping of COs with Assessment Tools

Course Outcomes	Assignment	CT1	CT2	CT3
CO1, CO2, CO3, CO4, CO5				

a. **COs Assessment Tools**

The various assessment tools used to evaluate COs and the frequency with which the assessment processes are carried out are listed in table below:

Table 2.2.2.2 Direct Assessment Tools

Course Type	Assessment Tools	Minimum Frequency
Theory	Internal Class Test	Three per course
	Assignments	Once per Unit
	Semester End Term Examination	Once per course
Practical	Internal Exam	Once per course
	Semester End Term Examination	Once per course
Industrial Training	Internal Evaluation	Once per course
	External Evaluation	Once per course
Seminar	Presentation	Once per course

Project	Phase 1	Review 1 by Project Assessment Committee	Once per course
		Review 2 by Project Assessment Committee	Once per course
		Review 3 by Project Assessment Committee	Once per course
		External Evaluation-Phase 1	Once per course
	Phase 2	Review 1 by Project Assessment Committee	Once per course
		Review 2 by Project Assessment Committee	Once per course
		Review 3 by Project Assessment Committee	Once per course
		External Evaluation-Phase 2	Once per course

b. **Quality/Relevance of Assessment Process:**

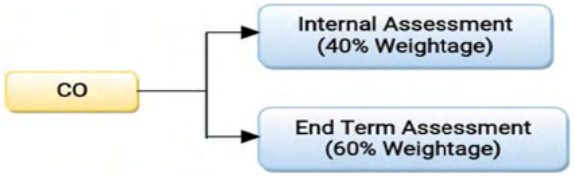


Figure 2.2.2.3 COs Weightage in Internal & External Assessment Process

Internal Tests: Internal tests serve to encourage students to keep up with course content covered in class. The questions are framed in such a way that it should satisfy Bloom's Taxonomy, wherein each question is mapped to the appropriate course outcome of the respective course, which is evaluated based on the set attainment levels by the department. To ensure the quality of internal tests, the question paper is verified by the senior faculty/ Head of the Department/ Principal is accepted with or without modifications.

Assignments: Assignments are qualitative performance assessment tools designed to assess students' knowledge of engineering practices, framework and problem solving. Students are assigned course-related work to be completed outside of contact hours, and their submissions are graded on the basis of work quality and originality. A minimum of one assignment is given per course and each assignment is evaluated for 10 marks. The questions in the assignment should be mapped to the Course Outcomes of the subject.

End term examination: The end-semester examinations are of 3-hour duration and cover the entire syllabus of the course. It would generally satisfy all course outcomes for a particular course. The CO's evaluated based on the set attainment levels.

Maintaining Quality of Lab Assignments through Lab Review Committee (LRC):

Lab Review Committee formulated for smooth conduction of all labs and this committee is working directly under the supervision of The Principal

1. To review all lab assignments before execution.
2. To visit in labs during semester ensuring smooth conduction of all labs.
3. To review twice in each semester.
4. To resolve the problems related to labs

Table 2.2.2.3 Format of review is given below:

S. No	Subject Code	Subject Name	Section	Lab Faculty	Status of Assignment	Student feedback	Faculty feedback	Remark by LRC members	Date of review	Status of lab notice board

Maintaining Quality of overall Academic Process through Internal Quality Assurance Cell (IQAC)

Roles and Responsibilities:

IQAC is playing a major role in designing and maintaining quality assurance within academic systems. The roles and responsibilities of the Cell is given below:

- IQAC monitors the proper implementation and analysis of overall academic and administrative performances
- Documentation of the various programmes /activities of the College, leading to quality improvement.
- Arrangement for feedback responses from students, parents and other stakeholders on quality-related institutional processes
- IQAC ensures maximum utilization of infrastructural facilities and the ICT resources
- IQAC ensures the proper implementation of academic calendar
- IQAC conducts regular meeting to discuss various measures related to quality enhancement
- IQAC motivates organization of seminars, conferences and workshops at different levels
- IQAC ensures the enhancement in the role of teacher and mentors to take up the role of counselors and motivate slow learners
- IQAC motivates faculty members to apply for Minor and Major Research Projects and Write research papers
- IQAC conducts Academic Audit
- IQAC checks attendance registers
- IQAC recommends students section formulation on the basis of merit because meritorious students have fast learning capability
- IQAC with the help of program coordinators and students, takes course coverage feedback before Internal Examination and also checks that prescribed syllabus is covered as per the exam cell guidelines.
- IQAC with the help of program coordinators performs course feedback from Students, Alumni and Industry for improving the quality of syllabus.
- IQAC once recommends the formation of GATE Committee for GATE classes.
- IQAC revises the mentor-mentee committee

In addition to above responsibilities IQAC conducts time to time audit to the followings:

- T & P cell
- Library
- Exam Cell
- CRC
- Infrastructure
- Documents like academic file, registers, mentor-mentee file
- Workshop, Seminar, FDP
- Conferences
- Club files

2.2.3 Quality of student projects (20) Institute Marks : 20.00

2.2.3.1 Processes related to students' projects

The projects are selected in line with department Vision, Mission and Program outcomes. HOD sends circular for identifying the domains after educating students about the following different verticals:

- Big Data Analytics
- Internet of Things
- Artificial Intelligence
- Image Processing
- Computer Networks
- Software Engineering
- Machine Learning

- Soft Computing

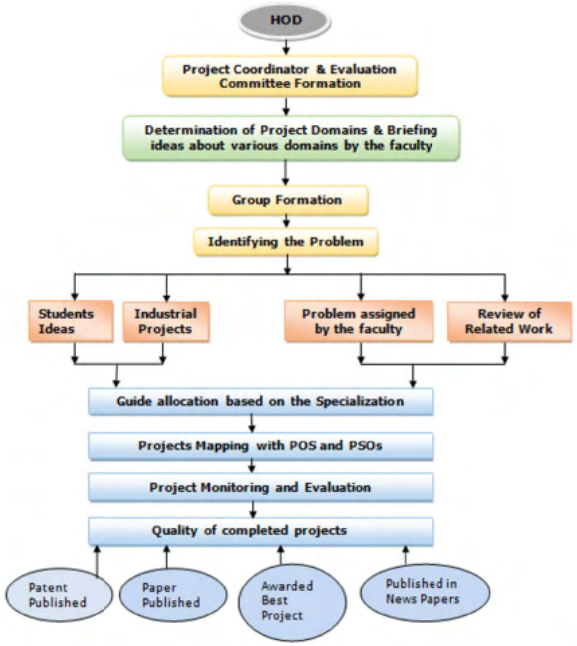


Figure 2.2.3.1 Process for Identification, Allocation and Evaluation of projects

Process 1: Project Identification: The Head of Department /PC provides the list of faculty members and their area of specialization to the students at least one month before the start of the 7th semester The list of the projects being offered by the faculty of the department will be displayed for the final year students at the start of the semester. Student can also propose project ideas they wish to undertake and submit project abstracts. A project coordinator is appointed by the Head of the department, who is responsible for planning, scheduling and execution of all the activities related to the student project work

Process 2: Formation of project batches: The project coordinator advises the students to form team of 2-3 students and identify the project area/title, obtain the consent of faculty/industry professionals to guide them. The Project coordinator collects these details from the students at least two weeks before the start of the 7th semester. The group of students includes students from weak, average and bright student categories.

Process 3: Allotment of project topics: The Head of Department/PC/project coordinator allocates project laboratory resources for in-house projects and allocates the number of days per week for working on the projects in the industry. (If the project is being carried out in industry).

Process 4: Continuous Monitoring and Project Review Calendar:

- For Smooth execution of project coordinator release the project execution calendar.
- The Head of Department/PC/project coordinator ensures that all projects are based on capstone design
- The facility, resource and place are provided to each team for developing their project.
- Guide of the project supervises and monitors the progress of the project according to project execution calendar.
- The progresses of the projects are reviewed in four stages before final evaluation: Project Synopsis phase, Project Progress Phase, First Live Demo and Final Live Demo are conducted by internal experts.
- After a final review is conducted by a panel having external experts.

Table 2.2.3.1 A sample project review calendar

Review	Dates
Synopsis Phase	DD/MM/YYYY
Progress Phase	DD/MM/YYYY
First Live Demo	DD/MM/YYYY

Final Demo	DD/MM/YYYY

Process 5: Project Evaluation and Parameters: In each review of the project work, the panel evaluates the progress on predefined expected parameters that are given in the following tables.

Table 2.2.3.2 Evaluation Parameters of Project Phase-1

Review #	Major Component for Evaluation	Evaluation Parameters	Marks
Synopsis Phase	Project scopes and proposal	• Literature review • Project relevance	10
Progress Phase	SRS,DFD and design work work	• Implementation methodology • Expected outcomes	10
First Live Demo	Technical achievement	• At least 50% running • Use of proper tools	10
Final Demo		• Full Running Condition • Conclusion and future scopes	10

Table 2.2.3.3 Evaluation Parameters of Project Phase-2

Review #	Major Component for Evaluation	Evaluation Parameters	Marks
First Review	Project Design	• Design process • Proposed tools and their relevance to implement the project	20
Second Review	Technical Achievement	• Innovative contribution • Use of proper tools	30
Final Review (External)	Overall Achievement	• Discussion of results • Quality of sketch, drawing and graphs • Team work and leadership	30
	Project Report Evaluation	• Quality of Project Report • Description of concepts and Knowledge of contemporary issues • Conclusion and future scopes	20

2.2.3.2 POs and PSOs addressed by projects

All POs and PSOs are evaluated for all the projects carried out by the students. The evaluation parameters are directly mapped with relevant POs and PSOs. The mapping between project evaluation parameters and POs/PSOs

Table 2.2.3.4 PO PSO Mapping for Project Phase-1

Evaluation Parameters	POs	PSOs
• Literature review • Project relevance	PO2, PO3, PO12	PSO2, PSO2
• Implementation methodology • Expected outcomes	PO5, PO12	PSO3, PSO5
• Innovative contribution • Use of proper tools	PO4, PO5	PSO3, PSO4
• Quality of project report • Description of concepts and Knowledge of contemporary issues • Conclusion and Future scope	PO11, PO6, PO12	PSO3, PSO2, PSO1

Table 2.2.3.5 PO PSO Mapping for Project Phase-2

Evaluation Parameters:	POs	PSOs
• Design process • Proposed tools and their relevance to implement the project	PO3, PO5	PSO3, PSO4
• Innovative contribution • Use of proper tools	PO4, PO5	PSO2, PSO4
• Discussion of Results • Quality of sketch, drawing and graphs • Team work and leadership	PO8, PO9, PO11	PSO4, PSO3, PSO2
• Quality of Project Report • Description of concepts and knowledge of contemporary issues • Conclusion and Future scopes	PO10, PO11	PSO3, PSO2, PSO1

Table 2.2.3.6 Assessment Process

Review #	Agenda	Description	Assessment	PO & PSO	Mark s
First review	Project Design	• Design process • Proposed tools and their relevance to implement the project.	Rubric Based	PO2, PO3, PO5 PSO1	20
Second review	Technical Achievement	• Innovative contribution • Use of proper tools	Rubric Based	PO4, PO5 PSO2	30
Final review (External evaluation)	Overall Achievement	• Discussion of results • Quality of sketch, drawing and graphs • Team work and leadership	Rubric Based	PO8, PO9, PO11 PSO1, PSO2	50
	Project Report Evaluation	• Quality of Project Report • Description of concepts and Knowledge of contemporary issues • Conclusion and future scopes	Rubric Based	PO6, PO1 0, PO1 1 PSO 2	

Table 2.2.3.7 Samples of students projects

SNO	Name	Enrollment No.	Sec	Group No.	Project Name	Technology	Internal Guide
1	Ilma Naaz	TCA1709112	A	A4	Chat Application	AI based	Mr. Ashish Bishnoi

Category Analysis of Projects: All projects carried out by the students are categorized on the basis of types of projects such as process effectiveness , team work, and business value. The summary of analysis report of the projects is given in the following table.

Table 2.2.3.8 Scale Parameters on scale of 1(Lowest) to 5(Highest)

		Date	Date	Date	Date
Parameters	Total	Project Synopsis Phase	Project Requirements Phase	1st Live Demo	Final Demo
Weightage% ->	50%	10%	10%	10%	20%

Section A - Process Effectiveness	**20%**				
Project Guidelines followed including templates?	5%				
All Artefacts (Project Synopsis, Project Requirements, Project Reports etc. are approved by the project guide)	5%				
Project milestones are met as per Project Guidelines?	5%				
All project artefacts (Project Synopsis Report, Code, Project Report etc.) are uploaded at Server in the lab?	5%				
Section B - Team Work	**20%**				
All team members in the Project Group were present in Project Synopsis presentation?	10%				
All team members have clarity on their role and presented progress as per their role with data respective to their roles?	5%				
NO team conflicts?	5%				
Section C - Business Value	**20%**				
Is the project deployable in any form?	5%				
Project Milestone is completed?	5%				
Project is deployed within / outside campus?	10%				
Section D - *to be filled by Project Co-ordinator*	**40%**				
Project Guide is in sync w.r.t. to details mentioned in the Project Synopsis/ Project Report?	20%				
Project Guide is present during the presentation?	10%				
Has the team shown evidences of the data collection from respective customer OR enough Research Work is done to conceptualize the project?	10%				

2.2.3.3 Quality of Projects

The good quality projects work is encouraged to present/ publish in the national/ international conferences and reputed journals. After categorizing the projects, they are mapped with POs and PSOs and the Attainments are assessed based on the following:

- Depth in fundamentals
- Clarity in problem analysis
- Methodology adopted
- Modern tool usage
- Impact on societal needs as useful products/processes
- Future scope of the work
- Novelty of work
- Team work
- Presentation and documentation
- Cost effectiveness and project management
- Employability
- Ethics

To ensure the relevance of projects, the need for the development of the project in the current technological context should be verified by the team consisting of project guide and project assessment committee members and projects are also mapped to POs and PSOs.

Project Objective:

1. To provide an opportunity for applying the knowledge gained at the time of study.
2. The students are expected to develop higher order skills, where in they analyze, evaluate and create.
3. To prepare students to solve/implement/upgrade the issues of the safety/ public health/ environmental/societal by application of computer science concepts or principles.

Quality of completed projects/ working prototypes

A committee consisting of Head of the Department, Faculty members and Project assessment committee is responsible to arrange a Project Exhibition/Review Presentation and select the best project each year based on the following parameters. The quality of the project is evaluated based on the conversion possibility of the project ideas into real outcome.

1. Business Value
2. Process Effectiveness
3. Team Work
4. Questions and Answer

Table 2.2.3.9 Best Project 2020-21

Sr. No.	Category	Faculty Guide Name	Project Title	Enrollment No.	Student Name
1	Process Effectiveness	Ashish Bishnoi	Face detection	TCA1709001	Rishabh jain
				TCA1709069	Suraj Kumar
				TCA1709114	Mohit prasad
2	Business Value	Rupal Gupta	Avacademy	TCA1709058	VARTIKA JAIN
				TCA1709127	ADITYA JAIN
3	Team Work	Rajendra P Pandey	Driver Drowsiness Detection	TCA1709156	Amar jain
				TCA1709159	Abhinav jain
				TCA1709160	Siddharth Jain
		Ankur Sisodia	Student Portal	TCA1709018	SHAH PRIYANK DINESH
				TCA1709101	VIRAG ALOK KUMAR JAIN
				TCA1709102	VIKAS JAIN

2.2.4 Initiatives related to industry interaction (10)

Institute Marks : 10.00

Industry Interaction

The industrial institutional interaction develops the student's skill to work on live projects related to the industrial issues; it exposes them to different opportunities. The following are the initiatives taken by the department:

Objectives of Industrial Visits:

- An opportunity to get exposure to real workstations, machines, and systems. Acquaint students with interesting facts and new technologies.
- Expert briefing about the functioning of machines and systems. Increase practical awareness of various industrial sectors.
- Opportunity to have a face to face session with technical or administrative experts of the organization to ask questions and clarify doubts. Understand the end-to-end process at all levels.
- Opportunity to understand policies and practices of Industry in terms of production, quality, and service management.

- Keeping these objectives at hand, the department organizes excursion tours cum industrial visits which are within the framework of the curriculum. The excursions and industrial visits are for the third year students which are relevant to the stream of study of the program.



Figure 2.2.4.1 Interaction with the experts of Industry

Table 2.2.4.1 Industrial Visits

S. No.	Company Visited	Date of Visit	Programme	No. of Students	Purpose of Visit
1	Amazon	5/3/2018	BCA, B.Tech. (Mech/EC), B.Sc. Hons. (CS/Physics/Maths)	22	Orientation cum Placement Drive
2	IBM India Pvt Ltd	11/28/2018	B.Tech. (CSE)	31	To show the Industry Culture
3	IBM Research Laboratory	8/28/2019	B.Tech. (CSE)	32	To familiarise students with various communication technologies
4	Network Bulls	11/14/2019	B.Sc. Hons. (CS)	50	In depth learning Cisco Networking Systems

Guest Lectures by Industry Experts

The industrial experts are invited for guest lecturers, workshops and seminars to enlightened the students for recent trends and technology developments relevant to their field of study. It gives them concurrent updated knowledge to keep them abreast of latest technology and motivate them to do excellent in industrial trends.

Table 2.2.4.2 Guest Lectures

S. No	Name of the Expert	Company Name	Broad Area	Date of visit
1.	Harsh Arora	Crisp Metrics	Insights of Machine Learning with Python	24-05-2021

2.	Avinash Kumar	Crisp Metrics	Word press	24-05-2021
3.	Ms. Ashmeet Kaur	Skill Clout	Employability Skill Training	17&18-09-2018
4.	Ms. Mahima Pandey	Skill Clout	Employability Skill Training	15&16-10-2018
5.	Ms. Devika Majumdar	Silver Peak Global Pvt Ltd	Japanese Language (Nihongo)	08-10-2018
6.	Mr. Sandeep Karan	CAC Ltd	Angular 5 Node JS	04-10-2018
7.	Mr. S.K. Singh	Baba Atomic Research Centre (BARC)	Career Opportunities in BARC	21-11-2018



Figure 2.2.4.2 Group Photo Graph Session with Industry Experts

Agreement with Companies for Quality Training

The Department has entered into an agreement with the following companies and conducted training for partial delivery of the Courses. In addition to the above, the University organizes various training programs related to current industry trends to meet the demands and trainers are outsourced from industry.

Table 2.2.4.3 Agreements

S. No	Company	No. of Students Enrolled	Area of Training	Outcome of the training	
				PO'S	PSO'S
1	Cisco	45	Networking	PO5, PO12, PO11	PSO2
2	Smart-brains	15	Networking	PO12, PO11	PSO3

3	IBM	20	Data Science & Cloud Computing	PO12, PO11	PSO3
4	Red Hat	40	Operating System	PO12, PO11	PSO3
5	Oracle	50	Software Development	PO12, PO11	PSO3

Collaboration with Industry/Organization:

To bridge the gap between academics and industry, the University has collaborated with various Industries/organizations to provide exposure to the students about latest trends and technologies in the industry, thereby enhancing the employability of the students. Table below shows the industry academia collaboration with various industries/organizations:

Table 2.2.4.3 MoUs Signed

S. No.	Name of the Company	Nature of MOU	Outcome of the MOU
1.	Wipro Technologies	Train the trainer (Talent Next Programme)	3 faculties trained.
2.	CISCO	Student Training and Certification	Every year students are trained in the CISCO Technologies
3.	IBM	Student Training with IBM	Every year students are trained in the IBM latest Technologies
4.	I-Nurture	Separate course is being conducted in Collaboration with I-Nurture	Every year students are trained in the latest Technologies with placement assistance.



Figure 2.2.4.3 MOU Signing & Group PhotoGraph Session with Industry Experts

Faculty Development Programmes by Academic/Industry Experts

The Department has organized various Faculty Development Programmes for the development of the faculty members to enhance their technical skills and administrative skills as per the recent trends. The details of various FDP organized at university level are as given below:

Table 2.2.4.3 FDP by Industry Persons

S. No.	Title of the Programme	Industry Resource Person(s) & Affiliation	Date	No. of Participants
1	Network Simulation and Data Security (NSDS-2018)	• Prof. Daya Krishan Lobiyal, JNU, • Dr. Anurag Jain, I. P. U. • Mr. Nitin Chauhan, 3rd Eye Solution	06-10.08.2018	57
2	Video Tutorials	Mr. Pradeep Kumar Gupta, Dept. of Animation, CCSIT	14 -18.01.2020	45
3	"Novel Approach on Blockchain Technology and Its Application"	• Prof. R.K. Dwivedi, FOE, Teerthanker Mahaveer University • Dr. Daniel Dasig Jr, Phillipines • Mr Sushil Kumar Singh, South Korea, • Dr Sandeep Kumar, HCL Technologies • Mr Prabhkar	22- 28.05.2020	47

4	Ways to improve career skills during Covid 19 Pandemic	• Prof. R K Dwivedi, Principal, FOE, TMU • Ms. Christine Dyack, Laurier University, Canada • Mohd. Arish Northambria University • Mr. Houssem Eddine, Northambria University • Mohd. Saboor Ahmad	26.06.2020	62
5	Machine Learning Using Python	• Dr. Partha Pratim Roy • Mr. S K manhas	22-29.04.2020	34

2.2.5 Initiatives related to industry internship/summer training (10) Institute Marks : 10.00

2.2.5.1 Initiatives /Implementation of Industrial Training:

Six weeks industrial training is included in the curriculum provided by the university for the 3rd year students. Department of computer science and engineering provides guidelines, suggestions, and scope of Industry Internship/Summer Training. The Training and placement cell and department help students to choose industry for summer training.

1. The college training and placement coordinator encourages students to undergo internship in the industries according to student's interest, in their pre-final year summer vacations. This enables the student:
2. To gain hands-on experience in implementing whatever they learn in their curriculum.
3. To train themselves on the state-of-the-art equipment's and standards used by the industries.
4. To present themselves as complete professionals, when they go for placements.Proper guidelines, suggestions, and scope of industry internship/summer training are provided to students.
5. Help students to select the industry for summer training.
6. Based on the inputs by students, few industries are identified by the training and placement department of the institute. Proper communication is carried out with the concerned industry. Students are allowed to do summer training in the industry for a maximum duration of 2 months (as per the university norms).
7. Students have to fill and submit the summer training application Form (Figure B.2.2.5b) provided by the training and placement department. It also provides the recommendation letter (Figure B.2.2.5c) and other necessary support to students.
8. The convener of alumni association constantly interacts with alumni working in different industries and requests them to provide necessary guidelines and support for summer training/internship of students.
9. Many students prefer to do some industry-specific training from organizations near their homes. Such students are advised on the kind of training programs they should prefer.
10. Department organizes in-house training program(s) in collaborations with some industry for students willing to do industrial training within campus.
11. In-house training programs are completely designed & monitored at the department level.
12. All the students are required to submit their training reports along with a certificate from the concerned industry.

FACULTY OF ENGINERING & COMPUTING SCIENCES (FOE&CS)
Delhi Road, N.H – 24, Moradabad – 244001, Ph/Fax – 0591-2476832. U.P

Dated: _____
Place: _____

The Assistant Director,
T & P Cell,
FOE&CS, Teerthanker Mahaveer University,
Moradabad, U.P

Sub: Application for allotment of Industrial Training Letter to 4th Sem/6th Sem B.Tech. (CSE/Civil/Mech/ECE/EEE) Student

Dear Sir/Madam,

This is to inform you that I am a bonafide student of College of Faculty of Engineering & Computing Sciences, TMU, having Enrollment No. _____, would like to go for Industrial Training in

(Company's Name) _____,

(Address) _____.

I hereby declare that after finishing my training I will submit my Project report to the college.

Your permission & approval will be needed for the same.

Thanking you,

(Signature)

Student's Detail

Name :
Course/Semester :
Enrollment No :
Email Id :
Phone No. :

Countersigned/Approved by

(Course Coordinator/HOD)

For Official Use

Letter Ref. Number: **(T & P Cell)**

Figure 2.2.5.1 Summer Training Application Form



तीर्थंकर महावीर विश्वविद्यालय
Teerthanker Mahaveer University
An Ultimate Destination for World Class Education

FACULTY OF ENGINEERING & COMPUTING SCIENCES (FOE&CS)
Delhi Road, N.H – 24, Moradabad – 244001, Ph/Fax – 0591-2476832. U.P

Ref: TMU/FOECS/T&P/B.Tech.CSE/19-20/__ Dated: ____

Sub: Allotment letter to B.Tech. (CSE) student for 4 weeks / 6 weeks Industrial Training

Dear Sir/Madam,

Warm Greetings from **Training & Placement Cell (T&P Cell), FOECS (Faculty of Engineering & Computing Sciences) under TMU, Moradabad, Uttar Pradesh.**
We at **FOECS** is a **Technical College** under **TMU** is offering professional courses like **B.Tech.(CSE/Mech/Civil/EC/EE), B.Sc.(CS/Physics/Chemistry/Maths/Animation), BCA, MCA, M.Sc. & M.Tech** meeting the standards of industry and corporate sector. Our students of **B.Tech. (CSE)** are required to undergo an exposure of developmental activities of software in working / operational environment for **6 weeks** as a part of their course curriculum.

During the training period students are required to work on a project and prepare a project report. The performance of students is evaluated by the way of presentation to a team of examiners nominated / appointed by the university. The evaluation is an integral part of the marks sheet of student.

Our student **Ms/Mr. ... ... of B.Tech. (CSE)** whose signature has been verified below is keen to go for training at your esteemed organization. We solicit your consent to grant permission for this training under the supervision of your strong and professional team.

We shall be grateful if you could permit him/her to carry out training in your esteemed organization.

For any query you may contact, Training & Placement Cell, 0591-2476800 or mail at – placement.comp.app@tmu.ac.in .

Thanks & Regards

Yours Sincerely,

Assistant Director, T&P
FOECS, TMU University
91 8057100444
Email – placement.comp.app@tmu.ac.in
Visit us – www.tmu.ac.in

Figure 2.2.5.2 Recommendation letter for internship/Summer Training

2.2.5.2 Post Training Assessment

After the completion of the training, the students are required to give a presentation and submit a report based on their training. In order to find the effectiveness of their training students are evaluated based on the following rubrics:

Knowledge and understanding of core topics of training (10 marks)	Organization of presentation (10 marks)	Presentation Skills (10 marks)	Questions/Answers handled (10 marks)	Training Report (10 marks)

3 COURSE OUTCOMES AND PROGRAM OUTCOMES (175) Total Marks 175.00

Define the Program specific outcomes

:

PSO1	Developing skills for creating computational solutions with emerging technologies, programming languages, mathematical foundations, algorithmic principles and open source platforms to solve complex engineering problems.
PSO2	Ability to understand the evolutionary changes in computing by applying standard practices and skills acquired through computer engineering to provide solutions with innovative ideas and interdisciplinary research.
PSO3	Ability to employ modern computer languages, environments, and platforms in creating innovative career paths to be an entrepreneur, and pursue higher studies in their respective domains.

3.1 Establish the correlation between the courses and the Program Outcomes (POs) & Program Specific Outcomes (25)

Total Marks 25.00

Institute Marks : 25.00

No. of Core Courses : 6	**C2 :** 2	**C3 :** 2	**C4 :** 2

Note : Number of Outcomes for a Course is expected to be around 6.

Course Name :	**C2 03**	**Course Year :**	**2017-2018**

Course Name	Statements
C2 03.1	Understanding of different data structures and their usage
C2 03.2	Applying the understanding to solve basic operations on data structures
C2 03.3	Analyzing various approaches to solve different problems using data structures.
C2 03.4	Analyzing various methods and the best solution as per running time of basic problems of programming.
C2 03.5	Developing programming skills to solve problems with various storage structures

Course Name :	**C2 04**	**Course Year :**	**2017-2018**

Course Name	Statements
C2 04.1	Understanding the fundamentals of Computational theory and basic terminology used
C2 04.2	Understanding basics of various machines used for computations like FSM, PDA, TM.
C2 04.3	Understanding the grammar, language, formation of regular expression in FA, minimization of FA and CFG.
C2 04.4	Applying the concepts to design various machines like FSM, PDA etc.
C2 04.5	Analyzing the efficiency of various machines based upon their functionality and limitations.

Course Name :	**C3 05**	**Course Year :**	**2018-2019**

Course Name	Statements
C3 05.1	Understanding the structure along with the lexical and syntactic analysis phase of a compiler.
C3 05.2	Understanding various parsing techniques.
C3 05.3	Understanding the intermediate code paradigms and apply them for solving various translation schemes
C3 05.4	Applying the various code optimization techniques and study code generation

C3 05.5	Analyzing the memory allocation schemes and the error detection on phases of compilation

Course Name :	**C3 06**	**Course Year :**	**2018-2019**

Course Name	Statements
C3 06.2	Applying basic principle of AI in solutions that require problem solving, inference, perception, knowledge representation and learning.
C3 06.3	Understanding awareness and fundamental understanding the various concepts of Prolog and Symbolic and Monotonic and non monotonic reasoning
C3 06.4	Understanding the concept of knowledge representation techniques called slot, filler and Natural Language processing
C3 06.5	Understanding the concept of Expert System and its Components and demonstrate the working of MYCIN AND DENDRAL expert system tools
C3 06.1	Understanding of the history of AI and different classical AI algorithms

Course Name :	**C4 07**	**Course Year :**	**2019-2020**

Course Name	Statements
C4 07.1	Understanding basic components of a Web Technology (Design And Architecture Using .NET).
C4 07.2	Understanding various categories of programs, Web, Window and Console Application. Organize and work with many projects.
C4 07.3	Applying skills and concepts to built small real life applications using Web Technology (Design And Architecture Using .NET) standards.
C4 07.4	Analyzing the usage of the Web Technology (Design And Architecture Using .NET) programs to create professional, academic, business and many software projects.
C4 07.5	Developing personal, academic and business documents by following the current professional and/or industry standards.

Course Name :	**C4 08**	**Course Year :**	**2019-2020**

Course Name	Statements
C4 08.1	Understanding fundamental characteristics of distributed system
C4 08.2	Understanding the concept of distributed objects and remote invocation methods.
C4 08.3	Understanding different distributed models for remote communication.
C4 08.4	Understanding the security mechanism and protocols for distributed transactions.
C4 08.5	Analyzing the concept of distributed algorithms and their performance associated with security issues and distributed deadlock.

Course Articulation Matrix :

1 . course name : C203

Course	Statements	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

C203.1	Understanc	1	1	1	-	-	-	-	-	-	-	-	-
C203.2	Applying th	1	2	1	1	-	-	-	-	-	-	-	-
C203.3	Analyzing v	3	3	2	1	-	-	-	-	-	-	-	2
C203.4	Analyzing v	3	3	2	1	-	-	-	-	-	-	-	1
C203.5	Developing	3	3	2	1	-	-	-	-	-	-	-	-
Average		**2.20**	**2.40**	**1.60**	**1.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.50**

2 . course name : C204

Course	Statements	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C204.1	Understanc	1	-	-	-	-	-	-	-	-	-	-	-
C204.2	Understanc	2	2	3	-	-	-	-	-	-	-	-	-
C204.3	Understanc	3	2	2	2	-	-	-	-	-	-	-	-
C204.4	Applying th	2	3	3	2	-	-	-	-	-	-	-	1
C204.5	Analyzing tl	2	2	2	2	-	-	-	-	-	-	-	1
Average		**2.00**	**2.30**	**2.50**	**2.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.00**

3 . course name : C305

Course	Statements	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C305.1	Understanc	1	-	-	-	-	-	1	-	-	1	2	1
C305.2	Understanc	1	-	-	-	-	-	1	-	-	1	1	1
C305.3	Understanc	2	-	-	1	2	1	-	1	1	-	1	1
C305.4	Applying th	3	1	1	2	3	1	-	1	-	-	1	1
C305.5	Analyzing tl	-	3	-	2	-	-	-	-	-	1	1	-
Average		**1.75**	**2.00**	**1.00**	**1.70**	**2.50**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.20**	**1.00**

4 . course name : C306

Course	Statements	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C306.2	Applying ba	1	2	2	-	2	-	-	-	-	-	-	1
C306.3	Understanc	1	1	2	3	1	-	-	-	-	-	-	1
C306.4	Understanc	-	-	3	2	3	-	-	-	-	-	-	1
C306.5	Understanc	-	-	2	-	2	-	-	-	-	-	-	1
C306.1	Understanc	1	2	-	-	3	-	-	-	-	-	-	1
Average		**1.00**	**1.67**	**2.25**	**2.50**	**2.20**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.00**

5 . course name : C407

Course	Statements	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C407.1	Understanc	1	1	1	-	2	-	-	-	-	-	-	2
C407.2	Understanc	1	1	1	-	2	-	-	-	-	-	-	2
C407.3	Applying sk	-	2	2	1	3	-	-	-	-	-	2	3
C407.4	Analyzing tl	-	3	3	1	1	-	-	-	-	-	2	3
C407.5	Developing	-	2	3	-	2	2	-	2	-	-	3	3
Average		**1.00**	**1.80**	**2.00**	**1.00**	**2.00**	**2.00**	**0.00**	**2.00**	**0.00**	**0.00**	**2.30**	**2.60**

6 . course name : C408

Course	Statements	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C408.1	Understanc	2	-	1	-	3	-	-	-	-	-	-	3
C408.2	Understanc	1	-	2	-	3	-	-	-	-	-	-	2
C408.3	Understanc	1	-	2	-	3	-	-	-	-	-	-	2
C408.4	Understanc	2	-	2	-	3	-	-	-	-	-	-	1
C408.5	Analyzing tl	2	3	-	3	2	-	-	-	-	-	-	2
Average		**1.60**	**3.00**	**1.75**	**3.00**	**2.80**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.00**

1 . Course Name : C203

Course	PSO1	PSO2	PSO3
C203.1	1	-	1
C203.2	2	-	1
C203.3	3	-	1
C203.4	3	2	2
C203.5	2	2	2
Average	**2.20**	**2.00**	**1.40**

2 . Course Name : C204

Course	PSO1	PSO2	PSO3
C204.1	1	1	1
C204.2	2	2	2
C204.3	2	1	2

C204.4	1	1	1
C204.5	2	1	1
Average	**1.60**	**1.20**	**1.40**

3 . Course Name : C305

Course	PSO1	PSO2	PSO3
C305.1	1	2	1
C305.2	1	2	2
C305.3	1	2	1
C305.4	1	2	2
C305.5	2	3	2
Average	**1.20**	**2.20**	**1.60**

4 . Course Name : C306

Course	PSO1	PSO2	PSO3
C306.2	1	2	1
C306.3	2	2	1
C306.4	1	2	3
C306.5	2	3	2
C306.1	3	2	2
Average	**1.80**	**2.20**	**1.80**

5 . Course Name : C407

Course	PSO1	PSO2	PSO3
C407.1	3	1	2
C407.2	2	3	1
C407.3	3	2	3
C407.4	3	2	3
C407.5	2	2	2
Average	**2.60**	**2.00**	**2.20**

6 . Course Name : C408

Course	PSO1	PSO2	PSO3
C408.1	3	3	2
C408.2	2	3	3
C408.3	3	3	2
C408.4	3	3	3
C408.5	3	3	2
Average	**2.80**	**3.00**	**2.40**

Program Articulation Matrix :

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EAS111	1.3	1.5	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EAS113	0.9	0.7	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EEE111	2.08	1.91	1.04	1.73	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2.6
EAS114	PO1	PO2	PO3	PO4	PO5	1.4	2.4	PO8	PO9	PO10	PO11	PO12
EHM149	0.4	0.8	0.7	0.4	0.4	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EAS163	1.8	1.6	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EEE161	1.7	1.5	1.68	1.17	1.49	1.68	PO7	PO8	PO9	PO10	PO11	PO12
EME161	0.4	PO2	PO3	PO4	0.4	0.4	0.4	0.4	PO9	PO10	PO11	PO12
EAS211	1.8	2.1	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EAS212	1.4	2.0	1.4	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EEC211	1.02	0.9	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ECS201	0.4	0.8	0.7	0.4	0.4	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EHM299	1	2	1.7	1	1	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EAS262	PO1	PO2	PO3	1.6	PO5	PO6	PO7	1.4	PO9	PO10	PO11	PO12
EEC261	1.6	1.2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ECS261	1	2	1.7	1	1	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EME262	1.6	PO2	1.2	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ECS301	0.9	0.8	PO3	0.8	0.8	PO6	PO7	PO8	PO9	PO10	PO11	0.8
ECS305	1.91	2.1	1.4	0.9	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ECS306	0.88	1.28	1.47	1.1	0.73	PO6	PO7	PO8	PO9	0.73	PO11	1.46
EEC302	1.3	1.4	PO3	1.5	0.9	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EAS301	1.28	1.4	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

EHM302	1.5	2.8	1.6	2.8	2.6	PO6	PO7	PO8	PO9	PO10	PO11	1.9
ECS355	1.6	2.6	1.3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1
ECS356	PO1	2.8	2.2	2	2.2	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EEC351	2	2.2	PO3	PO4	1	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EHM349	PO1	PO2	PO3	PO4	PO5	1.2	PO7	PO8	PO9	2	PO11	2
ECS401	1.6	1.8	2.0	1.6	PO5	PO6	PO7	PO8	PO9	PO10	PO11	0.8
ECS403	1.6	1.8	2	1.6	PO5	PO6	PO7	PO8	PO9	PO10	PO11	0.8
ECS404	1.6	1.4	1.4	1.2	0.8	PO6	PO7	PO8	0.8	0.8	1.2	1.3
ECS405	1.4	1.4	1.4	1.9	0.9	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ECS406	2	2.3	2.3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EAS403	PO1	PO2	PO3	PO4	PO5	1.76	1.28	1.92	1.28	0.96	PO11	0.96
ECS452	1.67	1.67	PO3	PO4	2	3	3	PO8	PO9	3	2	PO12
ECS453	1.6	1.6	PO3	1.6	1.6	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ECS454	1.6	1.8	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2.2
EHM499	2	2.3	2.5	PO4	2	PO6	PO7	PO8	PO9	PO10	PO11	1
ECS501	1.2	1.3	0.7	1.1	1.7	0.7	0.7	0.7	0.7	0.7	0.8	0.7
ECS502	2.1	1.5	PO3	1.9	1.5	PO6	PO7	PO8	PO9	PO10	PO11	1.5
ECS503	0.9	1.8	1.8	1	0.8	PO6	0.8	0.8	1.6	PO10	PO11	1.1
ECS508	1.3	1.6	1.6	1.8	PO5	PO6	PO7	PO8	PO9	PO10	PO11	0.8
EHM503	PO1	PO2	PO3	PO4	PO5	PO6	1.6	0.9	PO9	PO10	1.9	2.1
ECS552	1.3	1.8	2.3	1.8	1	2	1	1	2	PO10	1	1.8
ECS554	1.6	1.6	1.5	PO4	2	3	3	PO8	PO9	3	2	PO12
EHM599	PO1	PO2	PO3	2	PO5	1	1	1	3	3	PO11	1
ECS591	1.5	1.5	1	2	2	PO6	1	PO8	PO9	PO10	PO11	PO12
ECS506	1.5	1.5	1.3	1.5	1.1	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ECS507	2	1.4	2	PO4	PO5	PO6	PO7	PO8	PO9	1.6	PO11	PO12
ECS601	0.8	1.3	1.8	2	1.8	PO6	PO7	PO8	PO9	PO10	PO11	0.8
ECS603	1.6	1.6	1.6	1.6	1.6	0.6	0.5	1	0.6	1.1	1.4	1.6
ECS608	1.5	1.2	0.7	0.7	1.5	PO6	PO7	PO8	PO9	1	PO11	PO12
EHM649	PO1	PO2	PO3	1.6	PO5	0.8	0.8	0.8	2.4	2.4	PO11	0.8
ECS610	0.8	1	1	1	1.1	PO6	PO7	1.6	0.8	PO10	PO11	0.8
ECS651	1.3	2	1.7	2	2.5	1.7	1	PO8	2	1	2	2.2
ECS653	2.4	2	2.2	1.2	1.6	0.8	0.6	0.8	0.8	1.2	1.8	0.4
ECS654	1.5	3	1.5	1.5	2	PO6	PO7	PO8	PO9	2	PO11	PO12

ECS607	2.1	2.4	1.9	PO4	1.7	PO6	PO7	PO8	PO9	PO10	PO11	0.9
ECS609	1.3	1.7	0.9	PO4	PO5	PO6	PO7	0.9	PO9	PO10	PO11	0.9
ECS701	PO1	0.9	2.6	1.7	2.6	PO6	PO7	PO8	PO9	1.7	PO11	2.6
ECS703	1.1	0.9	PO3	1.7	0.9	PO6	PO7	PO8	PO9	PO10	PO11	0.9
ECS704	1	0.7	1.2	1.1	PO5	PO6	PO7	PO8	PO9	0.9	0.7	1.2
ECS751	1	1.8	2	1	2	2	PO7	2	PO9	PO10	2.3	2.6
ECS752	1	1	PO3	PO4	1	PO6	PO7	PO8	PO9	1	PO11	1
EHM703	PO1	PO2	PO3	PO4	PO5	2.1	0.9	1.8	0.9	PO10	PO11	PO12
ECS709	1.5	1.7	1.1	1.5	1	PO6	2.2	0.7	PO9	PO10	0.7	1
ECS791	1.7	2	2	PO4	1.7	1.3	1.7	1	1.5	1.7	2	1
ECS799	1	2	2.4	PO4	2	1.6	1.5	2	PO9	1.7	2.5	1.5
ECS801	1.1	1.3	1	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	0.8
ECS805	1.5	2.8	1.6	2.8	2.6	PO6	PO7	PO8	PO9	PO10	PO11	1.9
ECS851	1.2	1.4	1.7	1	1	PO6	PO7	1	1	PO10	PO11	PO12
ECS804	1	1.3	PO3	PO4	PO5	PO6	PO7	2	PO9	1.3	PO11	PO12
ECS853	1	1	1	1.5	PO5	PO6	2	1.5	1	PO10	PO11	PO12
ECS854	2	2.4	3	3	3	PO6	2.4	2	2	2	3	2
ECS899	2.8	1	1.2	PO4	1.6	2	2.5	PO8	1.2	1.8	1.8	2.4

Course	PSO1	PSO2	PSO3
EAS111	PSO1	PSO2	PSO3
EAS113	PSO1	PSO2	PSO3
EAS114	PSO1	PSO2	PSO3
EAS163	PSO1	PSO2	PSO3
EAS211	PSO1	PSO2	PSO3
EAS212	PSO1	PSO2	PSO3
EAS262	PSO1	PSO2	PSO3
EAS301	PSO1	PSO2	PSO3
EAS403	PSO1	PSO2	1.28
ECS201	0.6	0.4	0.4
ECS261	1	1	PSO3
ECS301	0.8	PSO2	PSO3
ECS305	1.9	1.7	1.2
ECS306	1.46	PSO2	0.73

ECS355	1.6	1.6	1
ECS356	2.4	PSO2	1
ECS401	1.3	1	1.1
ECS403	1.1	1.1	1.3
ECS404	1.2	0.8	0.8
ECS405	1.4	1.2	0.9
ECS406	2.4	1.8	1.6
ECS452	1.7	PSO2	2
ECS453	1.25	1.2	PSO3
ECS454	2.6	PSO2	1.6
ECS501	0.8	1.5	1.1
ECS502	1.7	2.4	1.9
ECS503	1	1.1	1.2
ECS506	1.2	0.9	1.2
ECS507	1.5	1.8	1.75
ECS508	1.8	1.6	1.9
ECS552	2.4	2.6	1.8
ECS554	2.2	2.4	2.2
ECS591	2.2	2.6	2.2
ECS601	1.4	1.8	1.4
ECS603	1.6	1.8	1.6
ECS607	1.7	2.1	1.4
ECS608	1.8	1.6	1.8
ECS609	1.7	1.9	1.7
ECS610	1.8	1.9	1.4
ECS651	1.8	2.4	2.2
ECS653	2	2.8	2.2
ECS654	2.6	2.6	2.2
ECS701	2.6	1.9	1.6
ECS703	1.9	1.7	1.6
ECS704	1.3	1.3	1.6
ECS709	1	0.7	0.7
ECS751	2.6	2	2.2
ECS752	2	2.2	2.2

ECS791	1.8	2.2	1.6
ECS799	2.8	1.8	2
ECS801	0.8	1.1	0.8
ECS804	1	1	1
ECS805	2.6	2.8	2.2
ECS851	1.5	1.5	1.4
ECS853	2	2	1
ECS854	2.2	2	1.6
ECS899	3	2.2	2.5
EEC211	PSO1	PSO2	PSO3
EEC261	PSO1	PSO2	PSO3
EEC302	1.3	PSO2	PSO3
EEC351	PSO1	PSO2	PSO3
EEE111	PSO1	PSO2	PSO3
EEE161	PSO1	PSO2	PSO3
EHM149	0.6	0.4	0.4
EHM299	1	1	PSO3
EHM302	2.6	2.8	2.24
EHM349	PSO1	PSO2	1
EHM499	1	1	1
EHM503	1.3	1.73	1
EHM599	2.2	2.6	2.4
EHM649	PSO1	PSO2	1.6
EHM703	PSO1	PSO2	1.4
EME161	PSO1	PSO2	PSO3
EME262	PSO1	PSO2	PSO3

3.2 Attainment of Course Outcomes (75)

Total Marks 75.00

Institute Marks : 10.00

Assessment Tools and Processes Used to Collect Data for Evaluation of Course Outcome

For each course, course outcomes (COs) are defined for the course by faculty member at the beginning of the semester using revised Bloom's taxonomy and tagged with cognitive levels. Targets for course outcomes are defined in terms of percentage of students getting greater than or equal to set percentage of marks.

Assessment is carried out as per assessment plan, that is, Continuous Internal Evaluation(CIE), Semester End Examination (SEE), Course Exit Survey(CES) and Alumni Survey using assessment instruments as sessional exams/class tests and assignments/quizzes as in theory course and similarly rubrics-based evaluation is done in other courses, mentioned in Fig. B.3.2.1a. COs are mapped with rubrics in courses other than Theory course.

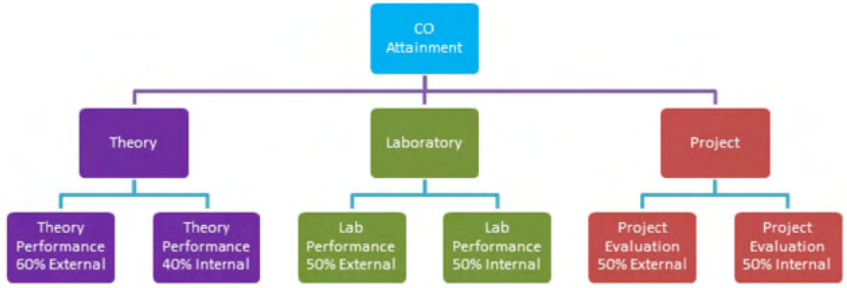


Figure 3.2.1 Framework for Measuring Course Outcome Attainment

3.2.1 Assessment Tools

The various assessment tools used to evaluate COs and the frequency with which the assessment processes are carried out are listed in table 3.2.1

Table 3.2.1 Direct Assessment Tools & Frequency of Assessment

Course Type		Assessment Tools	Minimum Frequency
Theory		Internal Test	Three per course
		Assignments	One per Unit
		Semester End Exam	Once per course
Practical		Internal Exam	Once per course
		Semester End Exam	Once per course
Industrial Training		Evaluation by Committee	Once per course
		Evaluation by Industry Supervisor	Once per course
		External Evaluation	Once per course
Project	**Phase 1**	Review 1 by Project Assessment Committee	Once per course
		Review 2 by Project Assessment Committee	Once per course
		Review 3 by Project Assessment Committee	Once per course
		External Evaluation- Phase 1	Final Evaluation for Phase 1
	Phase 2	Review 1 by Project Assessment Committee	Once per course
		Review 2 by Project Assessment Committee	Once per course
		Review 3 by Project Assessment Committee	Once per course
		External Evaluation- Phase 2	Once per course

For Theory Courses Attainment calculations (% of students getting ≥ set percentage of marks)

- Direct CO attainment is calculated using Continuous Internal Evaluation (CIE), CO_CIE
- Direct CO attainment is calculated using Semester End Examination(SEE), CO_SEE
- CO_Direct = 0.40*CO_CIE + 0.60*CO_SEE

For Practical Courses Attainment calculations (% of students getting ≥ set percentage of marks)

- Direct CO attainment is calculated using CIE, **CO_CIE**
- Direct CO attainment is calculated using SEE, **CO_SEE**
- CO_Direct = 0.50*CO_CIE + 0.50*CO_SEE

For Project Courses Attainment calculations (% of students getting ≥ set percentage of marks)

- Direct CO attainment is calculated using CIE, **CO_CIE**
- Direct CO attainment is calculated using SEE, **CO_SEE**
- CO_Direct = 0.50*CO_CIE + 0.50*CO_SEE

For Industrial Training Courses Attainment calculations (% of students getting ≥ set percentage of marks)

- Direct CO attainment is calculated using CIE, **CO_CIE**
- Direct CO attainment is calculated using SEE, **CO_SEE**
- CO_Direct = 0.50*CO_CIE + 0.50*CO_SEE

For each course outcome, CO, percentage of marks and attainment level of each student is calculated, and CO attainment is calculated. The CO attainment gaps are determined though CO attainment with respect to CO targets. For the next offering of course, an action plan is prepared to bridge the CO gap or enhancement is done in CO targets. Process carried out by the department from start of course and till the closure of quality loop is mentioned in Figure 3.2.1a.

3.2.2 Assessment processes

Course Outcome is evaluated based on the performance of student's in internal assessments and in university examination of a course. Internal assessment contributes 40% and university assessment contributes 60% to the total attainment of a CO.

Theory Course Performance-Internal/External Assessment

- The assessment process is consisted of the marks scored in Class Test-1 (30 marks), Class Test-2 (30) and Class Test-3 (30).
- For all theory courses the Class Test-1 (30 marks), Class Test-2 (30 Marks) and Class Test-3 (30 Marks) is conducted. The maximum weightage of class test in each course is of 20 marks.
- Additionally for assessment process, Attendance (10) & Assignment (10) are given to the students to induce self learning. To analyze the learning level for theory courses and for practical courses, level of completion of exercises are examined through the completion of record.

CO attainment process for Theory Courses

- Course Outcomes, COs, are defined by the faculty member for the allotted course and tagged with cognitive levels. Calculation of Direct CO Attainment using Continuous Internal Evaluation (CIE).
- Questions in sessional exams and assignments/quizzes are tagged with relevant COs.
- For each CO, percentage of marks and attainment level is calculated for each student after the conduction and evaluation of sessional exams and assignments/quizzes.
- % of students getting ≥ 50% of marks is calculated for each CO, CO_CIE.
- Calculation of Direct CO Attainment using Semester End Examination (SEE).
- Question-wise marks obtained are not provided by university, so here it is assumed that COs are commonly mapped with total marks.
- Percentage of marks and attainment level are calculated for each student after results of semester end examination.
- % of students getting ≥ 50% of marks is calculated and commonly attained of all CO, CO_SEE.
- Direct CO Attainment is calculated as 40% of CO attained using Continuous Internal Evaluation, CO_CIE and 60% of CO attained using Semester End Examination, CO_SEE, that is, CO_Direct = 0.40*CO_CIE + 0.60*CO_SEE.
- CO Attainment gap is determined by comparing CO attainments with CO targets.
- Action Plan is prepared for next offering of course in case of gaps, otherwise targets are enhanced.

Practical Course Performance-Internal/External Assessment

The Lab experiments address the COs of the respective Lab courses. During the Laboratory session, all the experiments are practically done using various software to enrich students knowledge in various domains. The students maintain the file for each Laboratory course. Which reflects their work during the laboratory session and verified by the respective subject handling faculty. Lab assessment is carried out based on the marks scored by the student in the laboratory.

For all practical courses the Experiment (30), Viva (10) & Attendance (10) is considered for CO Assessment.

As per SOP received online practical examinations assessment were taken as follows: Experiment (20), Viva (20).

CO attainment process for Practical Courses

- Course Outcomes, COs, are defined by the faculty member and tagged with cognitive levels.
- Calculation of CO Attainment using Continuous Internal Evaluation (CIE).
- Rubrics are defined for Lab Continuous Evaluation and Lab Internal Examination.
- COs are mapped with rubrics.
- For each CO, percentage of marks and attainment level is calculated for each student.
- % of students getting ≥ 50% of marks is calculated for each CO, CO_CIE.

- Calculation of CO Attainment using Semester End Examination (SEE).
- Rubrics/CO-wise marks obtained are not provided by university, so here it is assumed that COs are commonly mapped with total marks.
- Percentage of marks and attainment level is calculated for each student after semester end examination results.
- % of students getting ≥ 50% of marks is calculated and commonly attained of all CO, CO_SEE.
- CO Attainment is calculated as 50% of CO attained using Continuous Internal Evaluation, CO_CIE and 50% of CO attained using Semester End Examination, CO_SEE, that is, CO = 0.5*CO_CIE + 0.5*CO_SEE.
- CO Attainment gaps is determined by comparing CO attainments with CO targets.
- Action Plan is prepared for next offering of course in case of gaps, otherwise targets are enhanced.

Project Course Performance – Internal/External Assessment

For project evaluation, assessment process considers the marks scored in Review 1 (10), Review 2(10) and Review 3 (30) evaluated by evaluation Committee then it is poportionately reduced to 25 marks.

Project work carried out by the student is evaluated by Project Guide along with project review committee. Students interact with the project guide periodically and the progress of the project in three reviews (Review 1, Review 2, and Review 3) are evaluated.

CO Attainment Process for Project

- Course Outcomes, COs, are defined by Project Assessment Committee and tagged with cognitive levels.
- Calculation of CO Attainment using Continuous Internal Evaluation (CIE).
- Rubrics are defined for phase-wise Evaluation by Project Assessment committee and Evaluation by Project Supervisor.
- COs are mapped with rubrics.
- For each CO, percentage of marks and attainment level is calculated for each student.
- % of students getting ≥ 50% of marks is calculated for each CO, CO_CIE.
- Calculation of CO Attainment using Semester End Examination (SEE).
- Rubrics/CO-wise marks obtained are not provided by university, so here it is assumed that COs are commonly mapped with total marks.
- Percentage of marks and attainment levels are calculated for each student after semester end examination results.
- % of students getting ≥ 50% of marks is calculated and commonly attained of all CO, CO_SEE.
- CO Attainment is calculated as 50% of CO attained using Continuous Internal Evaluation, CO_CIE and 50% of CO attained using Semester End Examination CO_SEE, that is, CO = 0.50*CO_CIE + 0.50*CO_SEE.
- CO Attainment gap is determined by comparing CO attainments with CO targets.
- Action Plan is prepared for next offering of course in case of gaps, otherwise targets are enhanced.

CO attainment process for Industrial Training

- Course Outcomes, COs, are defined and tagged with cognitive levels.
- Calculation of CO Attainment using Internal Evaluation (IE).
- Rubrics are defined for evaluation of knowledge and skills attained during industrial training.
- COs are mapped with rubrics.
- For each CO, percentage of marks and attainment level is calculated for each student.
- % of students getting ≥ 50% of marks is calculated for each CO, CO.
- Calculation of CO Attainment using Semester End Examination (SEE).
- Rubrics/CO-wise marks obtained are not provided by university, so here it is assumed that COs are commonly mapped with total marks.
- Percentage of marks and attainment levels are calculated for each student after semester end examination results.
- % of students getting ≥ 50% of marks is calculated and commonly attained of all CO, CO_SEE.
- CO Attainment is calculated as 50% of CO attained using Continuous Internal Evaluation, CO_CIE and 50% of CO attained using Semester End Examination CO_SEE, that is, CO = 0.50*CO_CIE + 0.50*CO_SEE.
- CO Attainment gap is determined by comparing CO attainments with CO Targets.
- Action Plan is prepared for next offering of course in case of gaps, otherwise Targets are enhanced.

Course Outcome is evaluated based on the performance of student's in internal assessments and in university examination of a course. Internal assessment contributes 40% and university assessment contributes 60% to the total attainment of a CO.

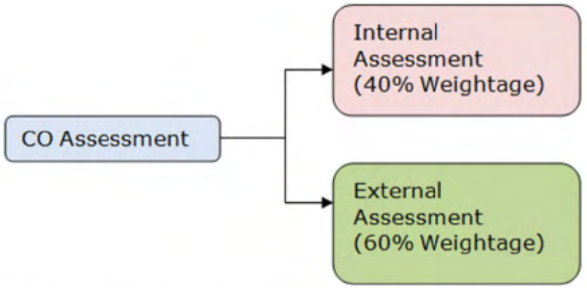


Figure 3.2.2 Weightage of Course Outcome in Internal & External Assessment

Table 3.2.2 Rubrics used in Practical Courses

Continuous Internal Evaluation of Practical Courses	Rubrics
Lab Continuous Evaluation	R1: Conduction
	R2: File Record
	R3: Regularity
Lab Internal Examination	R4: Execution
	R5: Write-up
	R6: Viva-Voce

Table 3.2.3 Rubrics used in Evaluation of Project

Continuous Internal Evaluation of Project	Rubrics	
Evaluation by Project Assessment Committee	Phase 1	R1: Refine the Requirements to Incorporate Suggestions
		R2: Objectives Meet/ Results as per the Expected time plan
		R3: Presentation as team and as an Individual
		R4: Questions and Answer
	Phase 2	R5: Final Report
		R6: Final Demonstration
		R7: Presentation as team and as an Individual
		R8: Questions and Answer
		R9: Research Paper Writing Based on Project
	R10: Assessed Project Progress	
	R11: Development of Prototype/ Model up to satisfaction level	

Evaluation by Project Supervisor	R12: Individual Contribution
	R13: Sincerity towards Work as Team
	R14: Project Report/Demo Preparation as per guidelines

Table 3.2.4 Project Assessment and Evaluation

Project	**Phase 1**	Review 1 by Project Assessment Committee	Once per course
		Review 2 by Project Assessment Committee	Once per course
		Review 3 by Project Assessment Committee	Once per course
		External Evaluation- Phase 1	Final Evaluation for Phase 1
	Phase 2	Review 1 by Project Assessment Committee	Once per course
		Review 2 by Project Assessment Committee	Once per course
		Review 3 by Project Assessment Committee	Once per course
		External Evaluation- Phase 2	Once per course

3.2.2 Record the attainment of Course Outcomes of all courses with respect to set attainment levels (65)

Institute Marks : 65.00

The threshold value for all the courses of B.Tech (Computer Science and Engineering) Program has been taken as minimum of 50%. The attainment is calculated based on the threshold value.

Target and levels of CO attainment :

The target set for the CO attainment is as fallows: **"For CO attainment, the target is set as at least 60% of students should secure 50% or above"**

Table 3.2.2.1 CO Attainment Process

Assessment Tools	Assessment Criteria	Data Collection
Cumulative Internal Examination (CIE)	Based on Performance in the Cumulative Internal Examination (CIE)	After completion of every Assessment Examination
Assignment	Written Assignment, Seminar, Group Discussion, and Quiz	After completion of each unit
Semester End Examination(SEE)	Based on their performance in the SEE	Once in the semester
Course Exit Survey	Based on questionnaire on a 3 point scale	After completion of each semester

Table 3.2.2.2 CO Attainment Rubrics Used

Name of Course	Weightage
Direct Course Attainment	100%

Attainment Levels :

Attainment level are measured in terms of students' performance with respect to course outcomes. The set attainment levels are

Table 3.2.2.3 Course Outcome Attainments Levels

Attainment %	Level	Score
≥60% and <70%	Low	1
≥70% and <80%	Moderate	2
80% and above	Substantial	3

Table 3.2.2.4 Attainments Record of all Course Outcomes for the Students of Batch 2016-2020.

Course	Course Name	Direct Attainment in %					Direct Attainment in Levels					Target Attainment (Y/N)				
		CO1	CO2	CO3	CO4	CO5	CO1	CO2	CO3	CO4	CO5	CO1	CO2	CO3	CO4	CO5
EAS111	Engineering Mathematics-I	82.76	82.76	77.59	75.86	51.72	3	3	2	2	0	Y	Y	Y	Y	N
EAS113	Engineering Chemistry	74.14	75.86	74.14	75.86	83.45	2	2	2	2	3	Y	Y	Y	Y	Y
EEE111	Basic Electrical Engineering	86.21	81.03	89.66	89.66	63.79	3	3	3	3	1	Y	Y	Y	Y	Y
EAS114	Environmental Studies	87.93	87.93	94.83	94.83	93.1	3	3	3	3	3	Y	Y	Y	Y	Y
EHM149	Foundation English -I	66.67	63.33	70	70	45	1	1	1	1	0	Y	Y	Y	Y	N
EAS163	Engineering Chemistry (Lab)	100	100	100	100	100	3	3	3	3	3	Y	Y	Y	Y	Y
EEE161	Basic Electrical Engineering (Lab)	100	100	100	100	100	3	3	3	3	3	Y	Y	Y	Y	Y
EME161	Engineering Drawing (Lab)	93.33	93.33	95	95	95	3	3	3	3	3	Y	Y	Y	Y	Y
EAS211	Engineering Mathematics-II	86.21	86.21	87.93	87.21	74.14	3	3	3	3	2	Y	Y	Y	Y	Y
EAS212	Engineering Physics	93.1	87.93	91.38	91.38	85.17	3	3	3	3	3	Y	Y	Y	Y	Y
EEC211	Basic Electronics Engineering	70.69	70.69	82.76	81.03	67.24	2	2	3	3	1	Y	Y	Y	Y	Y
ECS201	Computer Basics & C Programming	66.67	63.33	70	70	45	1	1	1	1	0	Y	Y	Y	Y	N
EHM299	Language Lab- I	93	93	93	93	93	3	3	3	3	3	Y	Y	Y	Y	Y
EAS262	Engineering Physics (Lab)	100	100	100	100	100	3	3	3	3	3	Y	Y	Y	Y	Y
EEC261	Basic Electronics Engineering (Lab)	100	100	100	100	100	3	3	3	3	3	Y	Y	Y	Y	Y
ECS261	Computer Basics & C Programming (Lab)	93	93	93	93	93	3	3	3	3	3	Y	Y	Y	Y	Y
EME262	Workshop Practice (Lab)	98	98	98	98	98	3	3	3	3	3	Y	Y	Y	Y	Y
ECS301	Discrete Structure	87.88	92.42	81.82	81.82	25.76	3	3	3	3	0	Y	Y	Y	Y	N
ECS305	Data Structure using C++	89.39	86.36	78.79	74.24	80.3	3	3	2	2	3	Y	Y	Y	Y	Y

ECS306	Data Base Management System	86.36	83.33	78.79	78.79	69.7	3	3	2	2	1	Y	Y	Y	Y	Y
EEC302	Digital Electronics & Computer Organization	92.42	92.42	81.82	78.79	84.85	3	3	3	2	3	Y	Y	Y	Y	Y
EAS 301	Mathematics-III	75.76	77.27	74.24	72.73	40.91	2	2	2	2	0	Y	Y	Y	Y	N
EHM302	Organizational Behaviour	87.87	90.9	80.3	83.33	56.06	3	3	3	3	0	Y	Y	Y	Y	N
ECS355	Data Structure using C++ (Lab)	100	100	100	100	100	3	3	3	3	3	Y	Y	Y	Y	Y
ECS356	Data Base Management System (Lab)	100	100	100	100	100	3	3	3	3	3	Y	Y	Y	Y	Y
EEC351	Digital Logic Circuit Lab	100	100	100	100	100	3	3	3	3	3	Y	Y	Y	Y	Y
EHM349	English Communication and Soft Skills-III	96.97	98.48	95.45	96.97	100	3	3	3	3	3	Y	Y	Y	Y	Y
ECS401	Theory of Computation	97	95.5	95.5	95.5	50	3	3	3	3	0	Y	Y	Y	Y	N
ECS403	Object Oriented Programming System	93.94	84.85	95.45	92.42	57.58	3	3	3	3	0	Y	Y	Y	Y	N
ECS404	Software Engineering	89.39	84.85	93.94	93.94	43.94	3	3	3	3	0	Y	Y	Y	Y	N
ECS405	Computer Based Numerical & Statistical Techniques	81.82	77.27	84.85	81.82	77.27	3	2	3	3	2	Y	Y	Y	Y	Y
ECS406	Operating System	95.45	95.45	96.97	93.94	81.82	3	3	3	3	3	Y	Y	Y	Y	Y
EAS403	Human Values & Professional Ethics	97	95.5	98.5	98.5	47	3	3	3	3	0	Y	Y	Y	Y	N
ECS452	C++ Programming (Lab)	100	100	100	100	100	3	3	3	3	3	Y	Y	Y	Y	Y
ECS453	Computer Based Numerical & Statistical Techniques (Lab)	91	100	100	100	100	3	3	3	3	3	Y	Y	Y	Y	Y
ECS454	Unix & Shell Programming (Lab)	100	100	100	100	100	3	3	3	3	3	Y	Y	Y	Y	Y
EHM499	English Communication and Soft Skills-IV	93.94	93.94	93.94	93.94	93.94	3	3	3	3	3	Y	Y	Y	Y	Y
ECS501	Compiler Design and Construction	87.88	83.33	78.79	69.7	68.18	3	3	2	1	1	Y	Y	Y	Y	Y
ECS502	Computer Architecture	97	87.9	95.5	89.4	75.8	3	3	3	3	2	Y	Y	Y	Y	Y
ECS503	Analysis and Design of Algorithms	92.42	92.42	89.39	89.39	22.73	3	3	3	3	0	Y	Y	Y	Y	N
ECS508	Java Programming	93.94	89.39	89.39	80.3	56.06	3	3	3	3	0	Y	Y	Y	Y	N
EHM503	Engineering & Managerial Economics	89.4	92.4	81.8	80.3	62.1	3	3	3	3	1	Y	Y	Y	Y	Y
ECS552	Analysis and Design of Algorithms (Lab)	100	100	100	100	100	3	3	3	3	3	Y	Y	Y	Y	Y

ECS554	Java Programming (Lab)	100	100	100	100	100	3	3	3	3	3	Y	Y	Y	Y	Y
EHM599	English Communication and Soft Skills-V	100	100	100	100	100	3	3	3	3	3	Y	Y	Y	Y	Y
ECS591	Industrial Training	100	100	100	100	100	3	3	3	3	3	Y	Y	Y	Y	Y
ECS506	ERP System	73.91	60.87	91.3	78.26	86.96	2	1	3	2	3	Y	Y	Y	Y	Y
ECS507	Mobile Communication	97.7	86	90.7	88.4	88.4	3	3	3	3	3	Y	Y	Y	Y	Y
ECS601	Artificial Intelligence	95.45	92.42	100	100	59.09	3	3	3	3	0	Y	Y	Y	Y	N
ECS603	Computer Graphics	97	95.5	97	97	39.4	3	3	3	3	0	Y	Y	Y	Y	N
ECS608	Computer Network	92.45	84.85	89.39	77.27	51.52	3	3	3	2	0	Y	Y	Y	Y	N
EHM649	English Communication and Soft Skills-VI	100	92.4	98.5	97	45.5	3	3	3	3	0	Y	Y	Y	Y	N
ECS610	Cyber Law & Information Security	93.94	86.36	93.94	95.45	50	3	3	3	3	0	Y	Y	Y	Y	N
ECS 651	Artificial Intelligence (Lab)	98	98	100	100	100	3	3	3	3	3	Y	Y	Y	Y	Y
ECS653	Computer Graphics (Lab)	100	100	100	100	100	3	3	3	3	3	Y	Y	Y	Y	Y
ECS654	Computer Network (Lab)	100	100	100	100	100	3	3	3	3	3	Y	Y	Y	Y	Y
ECS607	Soft Computing	92.31	76.92	96.15	96.15	73.08	3	2	3	3	2	Y	Y	Y	Y	Y
ECS609	E-Commerce	90	82.5	97.5	95	60	3	3	3	3	0	Y	Y	Y	Y	N
ECS701	Web Technology(Design And Architecture Using .NET)	98.48	95.45	87.88	68.18	98.48	3	3	3	1	3	Y	Y	Y	Y	Y
ECS703	Cryptography and Network Security	98.48	98.48	98.48	78.79	78.79	3	3	3	2	2	Y	Y	Y	Y	Y
ECS704	Software Project Management	95.45	93.94	81.82	69.7	62.12	3	3	3	1	1	Y	Y	Y	Y	Y
ECS751	Web Technology(Design And Architecture Using .NET)(Lab)	100	100	100	100	100	3	3	3	3	3	Y	Y	Y	Y	Y
ECS752	Cryptography and Network Security(LAB)	100	100	100	100	100	3	3	3	3	3	Y	Y	Y	Y	Y
EHM703	Industrail Psychology	97	90.9	95.5	86.4	51.5	3	3	3	3	0	Y	Y	Y	Y	N
ECS709	Cloud Computing	93.94	93.94	80.3	68.18	69.7	3	3	3	1	1	Y	Y	Y	Y	Y
ECS791	Industrial Training - II	100	100	100	100	100	3	3	3	3	3	Y	Y	Y	Y	Y
ECS799	Project Work Phase-1	100	100	100	100	100	3	3	3	3	3	Y	Y	Y	Y	Y
ECS801	Data warehousing and Data mining	95.45	86.36	100	100	39.39	3	3	3	3	0	Y	Y	Y	Y	N
ECS805	Distributed System	92.42	83.33	100	100	78.79	3	3	3	3	2	Y	Y	Y	Y	Y

ECS851	Data warehousing and Data mining (Lab)	100	100	100	100	100	3	3	3	3	3	Y	Y	Y	Y	Y
ECS804	Management Information System	100	89.39	100	100	98.48	3	3	3	3	3	Y	Y	Y	Y	Y
ECS853	Management Information System (Lab)	100	100	100	100	100	3	3	3	3	3	Y	Y	Y	Y	Y
ECS854	Android Programming (Lab)	100	100	100	100	100	3	3	3	3	3	Y	Y	Y	Y	Y
ECS899	Project Work Phase- 2	100	100	100	100	100	3	3	3	3	3	Y	Y	Y	Y	Y

3.3 Attainment of Program Outcomes and Program Specific Outcomes (75) Total Marks 75.00

3.3.1 Describe assessment tools and processes used for measuring the attainment of each Program Outcome and Program Specific Outcomes (10) Institute Marks : 10.00

Process for Measuring the attainment of each PO and PSO

- First the mapping between the individual Courses or subjects and the learning outcomes in terms of program Outcomes and Program Specific Outcomes has been carried out.
- Performance in these courses is then analyzed in detail to measure the degree to which the Program Outcomes and Program Specific Outcomes are attained. For example, there are various Projects based courses wherein the idea is to complete projects by going through all the phases from realization of need to the final making of the product. The performance in these projects is indicative of the level of attainment of Program outcomes like Engineering problem solving and Design.
- Performance in theory courses is measured according to the Grades obtained by the students in the Internal and External evaluation.
- These are shown separately in the Grade cards of the students so that the evaluation is independently performed by a least two different persons for the same course and provide an excellent basis for validation.
- The internal evaluation is completely transparent to the student as they can see the corrected answer books and check the evaluation.
- In case they feel that they deserve more than what they have got they can approach the course teacher for their redressal.
- Performance in Seminar Courses is indicative of the communication skills. Students are required to give seminar on a topic of their choice.
- The topic should be related to their discipline but can be something that is not directly related to the classroom work.
- These courses provide excellent platform for self study on topic of choice of the student and create the habit of life long and independent learning.

Table 3.3.1.1 Assessment Tools for measuring the Program Outcomes and Program Sepecific Outcomes

Direct	Assessment	Course Type	Assessment Tools		Minimum Frequency
		Theory	Internal Evaluation	CT's	Thrice per course
				Assignments	Once per course
			Semester End Term Examination		Once per course
		Practical	Internal Evaluation		Once per course
			Semester End Term Examination		Once per course
		English communication skills	Internal Evaluation	Presentation Skills / Viva–voce (Assignment)	Once per course
				Writing Skills (CT's)	
			Semester End Term Examination	Writing Skills (Written Exam)	Once per course
				Viva– voce	Once per course

		Project Phase- I	Review 1 by PAC	Once per course
			Review 2 by PAC	Once per course
			Review 3 by PAC	Once per course
			External Evaluation	Once per course
		Project Phase -II	Review 1 by PAC	Once per course
			Review 2 by PAC	Once per course
			Review 3 by PAC	Once per course
			External Evaluation	Once per course
Indirect	**Assessment**	**Alumni Survey**	Feedback (Questionnaire)	Once per Program
		Exit Survey	Feedback (Questionnaire)	Once Per Program

POs/ PSOs attainment is calculated for each course.

PO/PSO Attainment = (Actual mapping strength/ Maximum mapping strength) * average of attainments of relevant COs.

Direct PO/PSO Attainment = Average attainments of POs/ PSOs.

Indirect PO/PSO Attainment = Average of attainment from Student's Exit Survey and attainment from Alumni Survey

Process for POs/PSOs Attainment

1. Program outcomes (POs) are given by National Board of Accreditation (NBA) and Program specific outcomes (PSOs) are defined by department.

2. Curriculum given by university is adopted by program.

3. PSOs/POs Targets are defined for program.

4. Calculation of Direct attainment of POs/PSOs

A. **For each course, POs attainment is calculated as**

- Course outcomes are defined by faculty and tagged with cognitive levels.
- CO are mapped with POs and PSOs.
- Mapping strength of each PO and PSO is computed.
- CO attainment is computed as per process mentioned in sub-criterion 3.2.1
- For each POs/PSOs, relevant COs are identified.
- For each POs/PSOs, PO/PSO attainment = (Actual mapping strength/ Maximum mapping strength) Average of attainment of relevant COs.

B. Direct attainment = Average of attainments of POs and PSOs.

5. Calculation of Indirect attainment of POs/PSOs.

- Student's exit survey for all POs/PSOs is taken from graduating students.
- Attainment from student's exit survey is computed by taking average of all entries for each PO/PSO.
- Alumni survey for all POs/PSOs is taken from alumni.
- Attainment from alumni Survey is computed by taking average of all entries for each PO/PSO.
- Indirect attainment = Average of attainment from student's exit survey and attainment from alumni survey.

6. For each PO/PSO, Total attainment = 80% of direct attainment + 20% of indirect attainment.

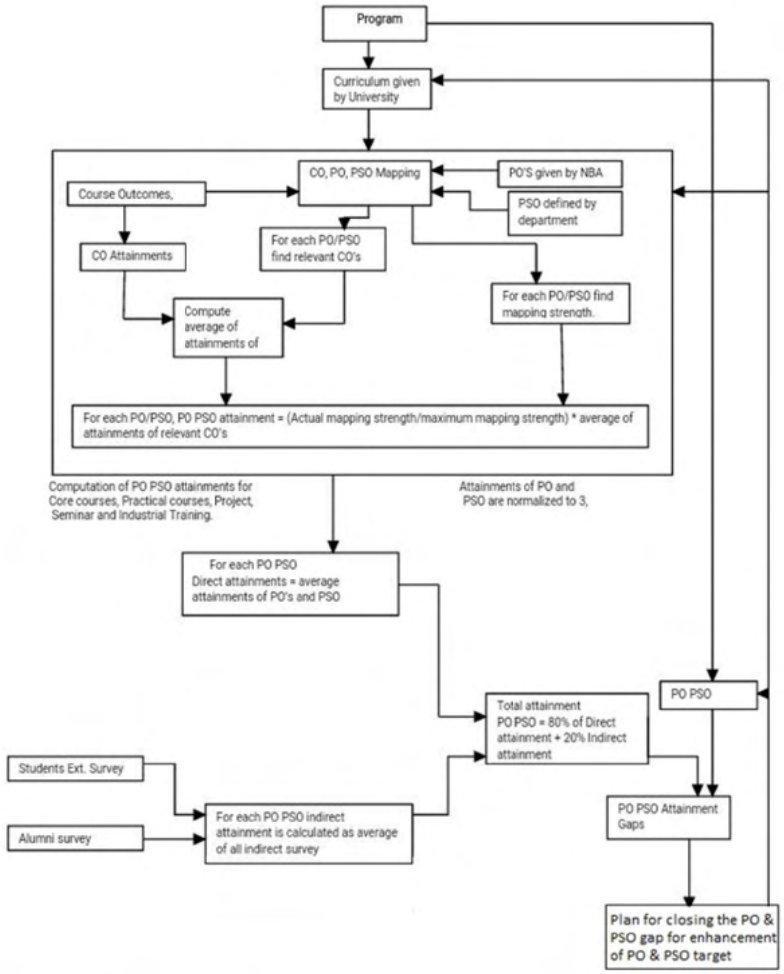


Figure : 3.3.1 Process for calculating Program Outcomes and Program Sepecific Outcomes

Table 3.3.1.2 Weightage of Assessment Tools for measuring the Program Outcomes and Program Sepecific Outcomes

	Weightage	Assessment Tools
Direct Attainment	80%	Theory CTs [I , II , III] Theory, Practical, Assignment , Project
		Semester End Term Examination
Indirect Attainment	20%	Alumni Survey
		Exit Survey

Overall PO Attainment	[Direct Attainment*0.8 +Indirect Attainment*0.2]

3.3.2 Provide results of evaluation of each PO & PSO (65) Institute Marks : 65.00

PO Attainment

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EAS111	1.3	1.5	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EAS113	0.9	0.7	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EEE111	2.08	1.91	1.04	1.73	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2.6
EAS114	PO1	PO2	PO3	PO4	PO5	1.4	2.4	PO8	PO9	PO10	PO11	PO12
EHM149	0.4	0.8	0.7	0.4	0.4	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EAS163	1.8	1.6	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EEE161	1.7	1.5	1.68	1.17	1.49	1.68	PO7	PO8	PO9	PO10	PO11	PO12
EME161	0.4	PO2	PO3	PO4	0.4	0.4	0.4	0.4	PO9	PO10	PO11	PO12
EAS211	1.8	2.1	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EAS212	1.4	2.0	1.4	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EEC211	1.02	0.9	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ECS201	0.4	0.8	0.7	0.4	0.4	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EHM299	1.0	2.0	1.7	1	1	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EAS262	PO1	PO2	PO3	1.6	PO5	PO6	PO7	1.4	PO9	PO10	PO11	PO12
EEC261	1.6	1.2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ECS261	1	2	1.7	1	1	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EME262	1.6	PO2	1.2	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ECS301	0.9	0.8	PO3	0.8	0.8	PO6	PO7	PO8	PO9	PO10	PO11	0.8
ECS305	1.91	2.1	1.4	0.9	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ECS306	0.88	1.28	1.47	1.1	0.73	PO6	PO7	PO8	PO9	0.73	PO11	1.46
EEC302	1.3	1.4	PO3	1.5	0.9	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EAS301	1.28	1.4	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EHM302	1.5	2.8	1.6	2.8	2.6	PO6	PO7	PO8	PO9	PO10	PO11	1.9
ECS355	1.6	2.6	1.3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1
ECS356	PO1	2.8	2.2	2	2.2	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EEC351	2	2.2	PO3	PO4	1	PO6	PO7	PO8	PO9	PO10	PO11	PO12

EHM349	PO1	PO2	PO3	PO4	PO5	1.2	PO7	PO8	PO9	2	PO11	2
ECS401	1.6	1.8	2.0	1.6	PO5	PO6	PO7	PO8	PO9	PO10	PO11	0.8
ECS403	1.6	1.8	2	1.6	PO5	PO6	PO7	PO8	PO9	PO10	PO11	0.8
ECS404	1.6	1.4	1.4	1.2	0.8	PO6	PO7	PO8	0.8	0.8	1.2	1.3
ECS405	1.4	1.4	1.4	1.9	0.9	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ECS406	2	2.3	2.3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EAS403	PO1	PO2	PO3	PO4	PO5	1.76	1.28	1.92	1.28	0.96	PO11	0.96
ECS452	1.67	1.67	PO3	PO4	2	3	3	PO8	PO9	3	2	PO12
ECS453	1.6	1.6	PO3	1.6	1.6	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ECS454	1.6	1.8	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2.2
EHM499	2	2.3	2.5	PO4	2	PO6	PO7	PO8	PO9	PO10	PO11	1
ECS501	1.2	1.3	0.7	1.1	1.7	0.7	0.7	0.7	0.7	0.7	0.8	0.7
ECS502	2.1	1.5	PO3	1.9	1.5	PO6	PO7	PO8	PO9	PO10	PO11	1.5
ECS503	0.9	1.8	1.8	1	0.8	PO6	0.8	0.8	1.6	PO10	PO11	1.1
ECS508	1.3	1.6	1.6	1.8	PO5	PO6	PO7	PO8	PO9	PO10	PO11	0.8
EHM503	PO1	PO2	PO3	PO4	PO5	PO6	1.6	0.9	PO9	PO10	1.9	2.9
ECS552	1.3	1.8	2.3	1.8	1	2	1	1	2	PO10	1	1.8
ECS554	1.6	1.6	1.5	PO4	2	3	3	PO8	PO9	3	2	PO12
EHM599	PO1	PO2	PO3	2	PO5	1	1	1	3	3	PO11	1
ECS591	1.5	1.5	1	2	2	PO6	1	PO8	PO9	PO10	PO11	PO12
ECS506	1.5	1.5	1.3	1.5	1.1	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ECS507	2	1.4	2	PO4	PO5	PO6	PO7	PO8	PO9	1.6	PO11	PO12
ECS601	0.8	1.3	1.8	2	1.8	PO6	PO7	PO8	PO9	PO10	PO11	0.8
ECS603	1.6	1.6	1.6	1.6	1.6	0.6	0.5	1	0.6	1.1	1.4	1.6
ECS608	1.5	1.2	0.7	0.7	1.5	PO6	PO7	PO8	PO9	1	PO11	PO12
EHM649	PO1	PO2	PO3	1.6	PO5	0.8	0.8	0.8	2.4	2.4	PO11	0.8
ECS610	0.8	1	1	1	1.1	PO6	PO7	1.6	0.8	PO10	PO11	0.8
ECS651	1.3	2	1.7	2	2.5	1.7	1	PO8	2	1	2	2.2
ECS653	2.4	2	2.2	1.2	1.6	0.8	0.6	0.8	0.8	1.2	1.8	0.4
ECS654	1.5	3	1.5	1.5	2	PO6	PO7	PO8	PO9	2	PO11	PO12
ECS609	1.3	1.7	0.9	PO4	PO5	PO6	PO7	0.9	PO9	PO10	PO11	0.9
ECS701	PO1	0.9	2.6	1.7	2.6	PO6	PO7	PO8	PO9	1.7	PO11	2.6
ECS703	1.1	0.9	PO3	1.7	0.9	PO6	PO7	PO8	PO9	PO10	PO11	0.9
ECS704	1	0.7	1.2	1.1	PO5	PO6	PO7	PO8	PO9	0.9	0.7	1.2

ECS751	1	1.8	2	1	2	2	PO7	2	PO9	PO10	2.3	2.6
ECS752	1	1	PO3	PO4	1	PO6	PO7	PO8	PO9	1	PO11	1
ECS709	1.5	1.7	1.1	1.5	1	PO6	2.2	0.7	PO9	PO10	0.7	1
ECS791	1.7	2	2	PO4	1.7	1.3	1.7	1	1.5	1.7	2	1
ECS799	1	2	2.4	PO4	2	1.6	1.5	2	PO9	1.7	2.5	1.5
ECS801	1.1	1.3	1	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	0.8
ECS805	1.5	2.8	1.6	2.8	2.6	PO6	PO7	PO8	PO9	PO10	PO11	1.9
ECS851	1.2	1.4	1.7	1	1	PO6	PO7	1	1	PO10	PO11	PO12
ECS804	1	1.3	PO3	PO4	PO5	PO6	PO7	2	PO9	1.3	PO11	PO12
ECS853	1	1	1	1.5	PO5	PO6	2	1.5	1	PO10	PO11	PO12
ECS854	2	2.4	3	3	3	PO6	2.4	2	2	2	3	2
ECS899	2.8	1	1.2	PO4	1.6	2	2.5	PO8	1.2	1.8	1.8	2.4
ECS607	2.1	2.4	1.9	PO4	1.7	PO6	PO7	PO8	PO9	PO10	PO11	0.9
EHM703	PO1	PO2	PO3	PO4	PO5	2.1	0.9	1.8	0.9	PO10	PO11	PO12

PO Attainment Indirect

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Program Ex	2.38	2.07	2.48	2.32	1.68	2.27	1.68	2.03	1.97	2.07	2.68	2.45
Alumni Surv	2.22	2.07	2.04	2.02	1.98	2.22	2.27	2.22	2.13	2.18	2.07	2.18

PO Attainment Level

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
InDirect Attainment	2.30	2.07	2.26	2.17	1.83	2.24	1.98	2.12	2.05	2.12	2.38	2.32
Direct Attainment	1.41	1.64	1.58	1.50	1.48	1.53	1.47	1.24	1.39	1.59	1.69	1.38

PSO Attainment

Course	PSO1	PSO2	PSO3
EAS111	PSO1	PSO2	PSO3
EAS113	PSO1	PSO2	PSO3
EAS114	PSO1	PSO2	PSO3
EAS163	PSO1	PSO2	PSO3
EAS211	PSO1	PSO2	PSO3
EAS212	PSO1	PSO2	PSO3
EAS262	PSO1	PSO2	PSO3
EAS301	PSO1	PSO2	PSO3
EAS403	PSO1	PSO2	1.28

ECS201	0.6	0.4	0.4
ECS261	1	1	PSO3
ECS301	0.8	PSO2	PSO3
ECS305	1.9	1.7	1.2
ECS306	1.46	PSO2	0.73
ECS355	1.6	1.6	1
ECS356	2.4	PSO2	1
ECS401	1.3	1	1.1
ECS403	1.1	1.1	1.3
ECS404	1.2	0.8	0.8
ECS405	1.4	1.2	0.9
ECS406	2.4	1.8	1.6
ECS452	1.7	PSO2	2
ECS453	1.25	1.2	PSO3
ECS454	2.6	PSO2	1.6
ECS501	0.8	1.5	1.1
ECS502	1.7	2.4	1.9
ECS503	1	1.1	1.2
ECS506	1.2	0.9	1.2
ECS507	1.5	1.8	1.75
ECS508	1.8	1.6	1.9
ECS552	2.4	2.6	1.8
ECS554	2.2	2.4	2.2
ECS591	2.2	2.6	2.2
ECS601	1.4	1.8	1.4
ECS603	1.6	1.8	1.6
ECS607	1.7	2.1	1.4
ECS608	1.8	1.6	1.8
ECS609	1.7	1.9	1.7
ECS610	1.8	1.9	1.4
ECS651	1.8	2.4	2.2
ECS653	2	2.8	2.2
ECS654	2.6	2.6	2.2
ECS701	2.6	1.9	1.6
ECS703	1.9	1.7	1.6

ECS704	1.3	1.3	1.6
ECS709	1	0.7	0.7
ECS751	2.6	2	2.2
ECS752	2	2.2	2.2
ECS791	1.8	2.2	1.6
ECS799	2.8	1.8	2
ECS801	0.8	1.1	0.8
ECS804	1	1	1
ECS805	2.6	2.8	2.2
ECS851	1.5	1.5	1.4
ECS853	2	2	1
ECS854	2.2	2	1.6
ECS899	3	2.2	2.5
EEC211	PSO1	PSO2	PSO3
EEC261	PSO1	PSO2	PSO3
EEC302	1.3	PSO2	PSO3
EEC351	PSO1	PSO2	PSO3
EEE111	PSO1	PSO2	PSO3
EEE161	PSO1	PSO2	PSO3
EHM149	0.6	0.4	0.4
EHM299	1	1	PSO3
EHM302	2.6	2.8	2.24
EHM349	PSO1	PSO2	1
EHM499	1	1	1
EHM503	1.3	1.73	1
EHM599	2.2	2.6	2.4
EHM649	PSO1	PSO2	1.6
EHM703	PSO1	PSO2	1.4
EME161	PSO1	PSO2	PSO3
EME262	PSO1	PSO2	PSO3

PSO Attainment Indirect

Survey	PSO1	PSO2	PSO3
Program Exit Survey	2.80	2.65	2.67
Alumni Survey	2.13	1.94	2.03

PSO Attainment Level

Course	PSO1	PSO2	PSO3
Direct Attainment	1.69	1.70	1.50
InDirect Attainment	2.46	2.30	2.35

4 STUDENTS' PERFORMANCE (100)

Total Marks 85.33

Institute Marks :

Table 4.1

Item (Information to be provided cumulatively for all the shifts with explicit headings, wherever applicable)	2020-21 (CAY)	2019-20 (CAYm1)	2018-19 (CAYm2)	2017-18 (CAYm3)	2016-17 (CAYm4)	2015-16 (CAYm5)	2014-15 (CAYm6)
Sanctioned intake of the program(N)	60	60	60	60	60	60	60
Total number of students admitted in first year minus number of students migrated to other programs/ institutions plus No. of students migrated to this program (N1)	60	60	60	60	60	59	43
Number of students admitted in 2nd year in the same batch via lateral entry (N2)	0	6	6	5	6	6	4
Separate division students, If applicable (N3)	0	0	0	0	0	0	0
Total number of students admitted in the programme(N1 + N2 + N3)	60	66	66	65	66	65	47

Table 4.2

Year of entry	Total No of students admitted in the program (N1 + N2 + N3)	Number of students who have successfully graduated without backlogs in any semester/ year of study (Without Backlog means no compartment or failures in any semester/ year of study)			
		I year	II year	III year	IV year
2020-21 (CAY)	60				
2019-20 (CAYm1)	66	56			
2018-19 (CAYm2)	66	48	47		
2017-18 (CAYm3)	65	44	46	44	
2016-17 (LYG)	66	58	62	61	61
2015-16 (LYGm1)	65	44	46	44	44
2014-15 (LYGm2)	47	31	31	31	31

Table 4.3

Year of entry	Total No of students admitted in the program (N1 + N2 + N3)	Number of students who have successfully graduated in stipulated period of study) [Total of with Backlog + without Backlog]			
		I year	II year	III year	IV year
2020-21 (CAY)	60				
2019-20 (CAYm1)	66	56			
2018-19 (CAYm2)	66	50	53		
2017-18 (CAYm3)	65	58	62	62	
2016-17 (LYG)	66	60	66	66	66
2015-16 (LYGm1)	65	59	65	65	65
2014-15 (LYGm2)	47	42	47	46	46

4.1 Enrolment Ratio (20)

Total Marks 20.00

Institute Marks : 20.00

	N (From Table 4.1)	N1 (From Table 4.1)	Enrollment Ratio [(N1/N)*100]
2020-21 (CAY)	60	60	100.00
2019-20 (CAYm1)	60	60	100.00
2018-19 (CAYm2)	60	60	100.00

Average [(ER1 + ER2 + ER3) / 3] : 100.00

Assessment : 20.00

4.2 Success Rate in the stipulated period of the program (20)

Total Marks 15.73

4.2.1 Success rate without backlogs in any semester / year of study (15)

Institute Marks : 10.80

Item	Latest Year of Graduation, LYG (2016-17)	Latest Year of Graduation minus 1, LYGm1 (2015-16)	Latest Year of Graduation minus 2 LYGm2 (2014-15)
X Number of students admitted in the corresponding First year + admitted in 2nd year via lateral entry and seperated division, if applicable	66.00	65	47
Y Number of students who have graduated without backlogs in the stipulated period	61.00	44	31.00
Success Index [SI = Y / X]	0.9	0.676	0.659

Average SI [(SI1 + SI2 + SI3) / 3] : 0.753

Assessment [15 * Average SI] : 11.29

4.2.2 Sucess rate in stipulated period (5)

Institute Marks : 4.93

Item	Latest Year of Graduation, LYG (2016-17)	Latest Year of Graduation minus 1, LYGm1 (2015-16)	Latest Year of Graduation minus 2 LYGm2 (2014-15)
X Number of students admitted in the corresponding First year + admitted in 2nd year via lateral entry and seperated division, if applicable	66.00	65	47
Y Number of students who have graduated in the stipulated period	66.00	65	46
Success Index [SI = Y / X]	1.00	1.00	0.97

Average SI[(SI1 + SI2 + SI3) / 3]: 0.99

Assessment [5 * Average SI] : 4.95

Note : If 100% students clear without any backlog then also total marks scored will be 40 as both 4.2.1 & 4.2.2 will be applicable simultaneously.

4.3 Academic Performance in Second Year (10)

Total Marks 10.00

Institute Marks : 10.00

Academic Performance	CAYm2 (2018-19)	CAYm3 (2017-18)	LYG (2016-17)
Mean of CGPA or mean percentage of all successful students(X)	7.44	7	7.56
Total number of successful students (Y)	59	62.00	66.00
Total number of students appeared in the examination (Z)	64	62	66.00
API [X * (Y/Z)]	6.85	7.00	7.56

Average API [(AP1 + AP2 + AP3)/3] : 7.13

Assessment [1.5 * AverageAPI] : 10.69

4.4 Placement, Higher Studies and Entrepreneurship (30)

Total Marks 19.60

Institute Marks : 19.60

Item	LYG(2016-17)	LYGm1(2015-16)	LYGm2(2014-15)
Total No of Final Year Students(N)	66.00	65.00	47.00
No of students placed in the companies or goverment sector(X)	48.00	40.00	23.00
No of students admitted to higher studies with valid qualifying scores(GATE or equivalent State or National Level tests, GRE, GMAT etc.) (Y)	2.00	0.00	0.00
No of students turned enterpreneur in engineering/technology (Z)	1.00	5.00	0.00
Placement Index [(X+Y+Z)/N] :	0.77	0.70	0.49

Average Placement [(P1 + P2 + P3)/3] : 0.65

Assessment [30 * Average Placement] : 19.60

Program Name : Computer Science & Engg.
Assessment Year : 2019-20 (CAYm1)

S.No	Student Name	Enrollment No	Employee Name	Appointment No
1	AARADHYA JAIN	TCA1609001	Capgemini	As per the mail received 30-06-2020
2	AARUSHI JAIN	TCA1609002	Wipro Technologies	Selection Acknowledgement received through mail
3	AMRITA KUMARI	TCA1609003	Euthissa Care Technology	ECTTMUA143 26-11-2019
4	AAYUSH JAIN	TCA1609004	Wipro Technologies	Selection Acknowledgement received through mail
5	AAYUSHI JAIN	TCA1609005	Smartbrains	As per the mail received 06-10-2020
6	ABDUL KAREEM	TCA1609008	TCS	TCSL/DT20195437397/Delhi 15-09-2019
7	ABHISHEK JAIN	TCA1609009	Euthissa Care Technology	ECTTMUA142 26-11-2019
8	ABHISHEK JAIN	TCA1609010	Capgemini	As per the mail received 30-06-2020
9	ADHYATMA JAIN	TCA1609013	DNJ Infotech	As per the mail Received 06-03-2020
10	AKSHAT JAIN	TCA1609016	TCS	TCSL/DT20184334636/Delhi 15-09-2019
11	AKSHITA JAIN	TCA1609017	DNJ Infotech	As per the mail Received 06-03-2020
12	AMAN JAIN	TCA1609018	Smartbrains	As per the mail received 06-10-2020
13	ANVITA JAIN	TCA1609026	DNJ Infotech	As per the mail Received 06-03-2020
14	AYUSH JAIN	TCA1609029	Smartbrains	As per the mail received 06-10-2020
15	AYUSHI JAIN	TCA1609034	DNJ Infotech	As per the mail Received 06-03-2020
16	DHEERAJ JAIN	TCA1609036	DNJ Infotech	As per the mail Received 06-03-2020
17	GOUTAM VOHRA	TCA1609043	Euthissa Care Technology	ECTTMUG148 26-11-2019
18	HARSH JAIN	TCA1609045	DNJ Infotech	As per the mail Received 06-03-2020
19	HIMANI JAIN	TCA1609047	Euthissa Care Technology	ECTTMUH149 26-11-2019
20	JATIN JAIN	TCA1609049	DNJ Infotech	As per the mail Received 06-03-2020
21	MITANSHU MEHTA	TCA1609060	TCS	TCSL/DT20184337290/Delhi 27-09-2019
22	MOHD AAMIR	TCA1609062	Wipro Technologies	Not Mentioned in Offer Letter16-06-2020

23	NAMAN JAIN	TCA1609067	Euthissa Care Technology	ECTTMUN156 26-11-2019
24	NAMITA PRADHAN	TCA1609069	Smartbrains	As per the mail received 06-10-2020
25	PRAGATI JAIN	TCA1609076	DNJ Infotech	As per the mail Received 06-03-2020
26	PRIYANSHI JAIN	TCA1609081	Euthissa Care Technology	ECTTMUP159 26-11-2019
27	PRIYANSHU JAIN	TCA1609082	Capgemini	As per the mail received 30-06-2020
28	RITIKA JAIN	TCA1609089	Cloud Analogy	As per the mail Received 06-08-2020
29	RIYA JAIN	TCA1609090	DNJ Infotech	As per the mail Received 06-03-2020
30	SAHIL JAIN	TCA1609092	Cognizant	1424213 29-06-2020
31	SAJAL GUPTA	TCA1609095	Euthissa Care Technology	ECTTMUS160 26-11-2019
32	SAMBHAV JAIN	TCA1609096	Assessment Pvt Ltd	As per mail Received 03-03-2020
33	SAMBHAV KUMAR JAIN	TCA1609097	TCS	TCSL/DT20195445530/Delhi 27-09-2019
34	SANKALP JAIN	TCA1609100	DNJ Infotech	As per the mail Received 06-03-2020
35	SARTHAK JAIN	TCA1609101	Wipro Technologies	Not Mentioned in Offer Letter 19-06-2020
36	SAUMYA JAIN	TCA1609102	Capgemini	As per the mail received 30-06-2020
37	SHUBHAM KUMAR JAIN	TCA1609111	Wipro Technologies	Not Mentioned in Offer Letter 11-06-2020
38	SIDDHARTH JAIN	TCA1609113	Thinksys Software	As per the mail received 10-01-2020
39	SMRATI JAIN	TCA1609117	Cloud Analogy	As per the mail Received 06-08-2020
40	SOMYA JAIN	TCA1609118	Cloud Analogy	As per the mail Received 07-08-2020
41	SONALI JAIN	TCA1609119	TCS	TCSL/DT20195486179/Delhi 15-09-2019
42	UPVAN JAIN	TCA1609125	TCS	TCSL/DT20184329287/Delhi 15-09-2019
43	URVASHI TYAGI	TCA1609126	Euthissa Care Technology	ECTTMUU165 26-11-2019
44	VAIBHAV JAIN	TCA1609127	TCS	TCSL/DT20195434785/Delhi 15-09-2019
45	YASHI SHARMA	TCA1609133	Smartbrains	As per the mail received 06-10-2020
46	ABHISHEK JAIN	TCA1609135	Capgemini	As per the mail received 30-06-2020
47	SANSKRITI JAIN	TCA1711001	DNJ Infotech	As per the mail Received 06-03-2020
48	SHRUTIKA KHANAK	TCA1711006	DNJ Infotech	As per the mail Received 06-03-2020

Assessment Year : 2018-19 (CAYm2)

S.No	Student Name	Enrollment No	Employee Name	Appointment No
1	ABHISHEK JAIN	TCA1509002	Hex aware	Offer letter not Received
2	ADITI AGARWAL	TCA1509003	TCS	TCSL/DT20184617723/Delhi 09-10-2018
3	ADITYA ANAND	TCA1509004	ITENIC Technologies	ITENIC/NOI/HR/COL/T713 09-11-2018
4	ADITYA SINGH	TCA1509006	Intab	Offer letter not Received
5	AKANSHA KATHARIYA	TCA1509007	Wipro	8421610 12-01-2019
6	AKASH SINGH	TCA1509009	Intab	Offer letter not Received
7	AMAN JAIN	TCA1509012	Wipro	8404683 12-01-2019
8	AMAN SAXENA	TCA1509014	Tech Mahindra	Not Mentioned in Offer Letter

9	ANURAG JAIN	TCA1509017	Karvy Data Management	Offer letter not Received
10	CHITRA GAUTAM	TCA1509023	EMEIS Technologies	Not Mentioned in Offer Letter 08-10-2018
11	DIKSHIT RAJ	TCA1509027	Binary Semantics	BSL/HR/Offer/2020-21/124 03-03-2021
12	HEMANT JAIN	TCA1509030	TCS	TCSL/DT20184318505/Delhi 01-10-2018
13	ISHA JAIN	TCA1509032	NIIT Kudos	As per the mail Received 12-01-2019
14	JATIN JAIN	TCA1509033	Wipro	8422646 12-01-2019
15	JAYA JAIN	TCA1509034	Artech Info systems	Not Mentioned in Offer Letter 13-03-2020
16	JINENDRA JAIN	TCA1509035	Experis IT	As per the mail Received 12-02-2019
17	JITESH DIXIT	TCA1509036	Karvy Data Management	Offer letter not Received
18	JUHI RAHI	TCA1509037	Genix Technology	Not Mentioned in Offer Letter 10-10-2018
19	KUMAR SRI HARSH	TCA1509041	TCS	TCSL/DT20184630082/Delhi 09-10-2018
20	POORVI JAIN	TCA1509056	Cognixia	COG/NOI/HR/COL/338 10-01-2019
21	PRACHI MISHRA	TCA1509057	PC Bizness	Not Mentioned in Offer Letter 07-03-2019
22	RAGHU JAIN	TCA1509061	Cognixia	COG/NOI/HR/COL/339 10-01-2019
23	RAJAT SINGH CHANDROL	TCA1509063	Wipro	Offer letter not Received
24	RITIK JAIN	TCA1509067	Oodles Technologies	Not Mentioned in Offer Letter 08-01-2019
25	RIYA JAIN	TCA1509068	HCL	Offer letter not Received
26	SABAL JAIN	TCA1509070	Wipro	Offer letter not Received
27	SAGUN JAIN	TCA1509074	Experis IT	As per the mail Received 12-02-2019
28	SAJAL GUPTA	TCA1509076	Hexaware	Offer letter not Received
29	SAMBHAV KUMAR JAIN	TCA1509080	Karvy Data Management	236705 29-05-2019
30	SANA FATIMA	TCA1509082	Tech Mahindra	Not Mentioned in Offer Letter
31	SHUBHAM JAIN	TCA1509087	Decabits Software	Not Mentioned in Offer Letter 01-02-2019
32	SHUBHI JAIN	TCA1509090	TCS	TCSL/DT20184670507/Delhi 09-10-2018
33	UTTAM PANDEY	TCA1509100	TCS	TCSL/DT20184716505/Delhi 01-10-2018
34	VAIBHAV JAIN	TCA1509102	TMU	Offer letter not Received
35	VISHAL JAIN	TCA1509107	ANR Software	As per the mail Received 10-01-2019
36	ROHIT JAIN	TCA1509118	Experis IT	As per the mail Received 12-02-2019
37	HIMANSHU SINGH	TCA1509119	Wipro	8400244 12-01-2019
38	MALAV JAIN	TCA1509121	Wipro	8414523 12-01-2019
39	DEVANSH SAH	TCA1611003	TCS	TCSL/DT20184715789/Delhi 09-10-2018
40	SHEFALI JAIN	TCA1611011	Adeptia Software	Not Mentioned in Offer Letter 18-02-2019

Assessment Year : 2017-18 (CAYm3)

S.No	Student Name	Enrollment No	Employee Name	Appointment No
1	Abhijeet Kumar	TCA1409079	Data Infovision	As per the mail received 17-05-2017
2	Aditya Jain	TCA1409002	Optimus Information	Not Mentioned in Offer Letter 4-03-2018
3	Apoorva Jain	TCA1409014	Experis IT Pvt Ltd	As per the mail received 19-06-2018
4	Arpit Kumar	TCA1409112	Sony India	As per the mail received 10-09-2017
5	Ashutosh Kumar Giri	TCA1409016	Daffodil Software	Not Mentioned in Offer Letter 20-03-2018
6	Ayush Jain	TCA1409018	Sony India	As per the mail received 10-09-2017
7	Deepanshi Jain	TCA1409025	Sony India	As per the mail received 10-09-2017
8	Dimple Bhatera	TCA1409026	Avissol	Not Mentioned in Offer Letter 01-04-2018
9	Isha Jain	TCA1409030	Data Infovision	As per the mail received 17-05-2017
10	Kinshuk Rastogi	TCA1409032	Sony India	As per the mail received 10-09-2017
11	Kumari Archana	TCA1409033	Sony India	As per the mail received 10-09-2017
12	Naman Jain	TCA1409041	Adeptia India	Not Mentioned in Offer Letter 15-06-2018
13	Paras Rastogi	TCA1409048	Avissol	Not Mentioned in Offer Letter 01-04-2018
14	Priyanka Jain	TCA1409054	Pie Infocomm	Not Mentioned in Offer Letter 20-09-2017
15	Satyam Pandey	TCA1409062	Sony India	As per the mail received 10-09-2017
16	Shaurya Jain	TCA1409063	Face Academy	Not Mentioned in Offer Letter 22-03-2018
17	Sourabh Jain	TCA1409071	Pie Infocomm	Not Mentioned in Offer Letter 20-09-2017
18	Swapnil Jain	TCA1409072	Sony India	As per the mail received 10-09-2017
19	Ujjwal Singhal	TCA1409074	Varun Capitals Services Ltd	Not Mentioned in Offer Letter 10-08-2017
20	Visha Garg	TCA1409076	Sony India	As per the mail received 10-09-2017
21	Vivek Kumar	TCA1409077	Data Infovision	As per the mail received 17-05-2017
22	Askari Mehdi	TCA1511002	Data Infovision	As per the mail received 17-05-2017
23	Inderjeet Singh	TCA1511011	Designing Kart	Not Mentioned in Offer Letter 10-09-2017

4.5 Professional Activities (20) Total Marks 20.00

4.5.1 Professional societies/chapters and organizing engineering events (5) Institute Marks : 5.00

Table 4.5.1.1 List of Professional societies membership

Sr. No.	Institutional Membership	LOGO	Membership Number
1	IEEE	IEEE	**STB1523**

2	CSI		**CSI 101610**

4.5.1.1 Organized Engineering Events

Following evens organized in last three years.

Table 4.5.1.2 Engineering Events Organized in Year 2021

S. no.	Event Name	Event Date
1	National Science Day 2021	02-03-2021
2	Engineers s Role in Energy Conservation, Energy Efficiency, Use of Renewable Energy, Environment, Climate Change	17-03-2021
3	Incubation Visit at ABES-EC GZB	19-03-2021
4	Intellectual Property Rights (IPRs) & IP Management	19-03-2021
5	EDUCATION CONCLAVE	28-02-21 & 01-03-21
6	Expert Talk on Toycathon	11-01-2021

Table 4.5.1.3 Engineering Events Organized in Year 2020

S. No.	Event Name	Event Date
1	Entrepreneurship and Innovation as Career Opportunity	02-12-2020
2	SMART-2020 Conference	4 & 5 Dec,2020
3	Cyber Security Innovation Hackathon	08-12-2020
4	More about Electronics Test and Measuring Instruments	12-12-2020
5	National Conference on Materials & Devices-2020	18-19, December,2020
6	National Innovation and start-up Policy (NISP)	22-12-2020
7	Entrepreneurial Development into the field of IoT and Cloud Computing	23-12-2020
8	Entrepreneurship Awareness Camp (EAC)	28 to 30-Dec-2020
9	Alumni Meet & Interaction under Samwad Series	01-11-2020
10	ICAC-2020 & Book Chapter	07-11-2020
11	Innovations in Online Teaching & Assessments	21-11-2020

12	National Webinar on Role of English Communication in academics & professional success	01-10-2020
13	Khoj 2020	02-10-20 to 04-11-20
14	Android Development with Kotlin	05 to 10-Oct-2020
15	International Webinar on Mysterious Relationship of the Sun and the Earth	05-10-2020
16	Technical Session on Induction Program 2020	05-10-2020
17	Coding Bootcamp 1.0 IRON HACK REACTOR	06-10-2020
18	Hands-on Workshop on Data Recovery and Security	08-10-2020
19	Orientation Program & Bridge Course for New Entrants	09-10-2020
20	IIC Celebration	16-10-2020
21	SIH 2020	1 to 4-Aug-2020
22	Symposium on NEP-2020	5 to 11-Sep-20
23	Orientation Day Program	25-Sep to 15-Oct-2020
24	Machine Learning using Python	22 to 29-April-2020
25	Novel Approaches of Blockchain Technology & Its Application	22-28 May, 2020
26	Cyber Security Webinar dated	27th May 2020
27	Smart Energy Solutions to Boost Power Sector Economy During Pandemic	06-Jun-20
28	ECE Webinar	8-9, June,2020
29	Writing a Research Grant Proposal	15-Jun-20
30	Webinar by physics department	16-17-June,2020
31	CSE-International Webinar	17-18 June,2020
32	INTERNATIONAL FACULTY DEVELOPMENT PROGRAM	24 to 26-June, 2020
33	Webinar proceeding - understanding AutoCAD for beginner	7-8-July,2020
34	Webinar on waste management	14-July,2020
35	AI & Data Science Webinar	22nd July, 2020
36	Data Analytics Webinar	23-Jul-20
37	Webinar on -HOW TO CREATE VIDEO TUTORIALS	14 to 18-Jan-2020
38	Special Session by Mohit Gambhir, Innovation Cell (MIC) on SIH 2020 Insights	24-01-2020
39	Webinar on Contribution of Building Chemicals in Building Performance	29-01-2020
40	Smart India Hackathon 2020	30-01-2020
41	Workshop on Industrial Internet of Things (IIOT)	03-02-2020

42	Webinar Introduction to Machine Learning with AWS	04-02-2020
43	Workshop on Machine Learning using Python	06 & 07- Feb-2020
44	Recent trends in Design Innovation & HCI	07 & 08-Feb-2020
45	Seminar on Research Pedagogy	17-02-2020
46	Guest Lecture on Recent trends in Machine Learning	19-02-2020
47	National Science Day-2020	28-02-2020
48	National Conference on Industry 4.0 (NCI 4.0)	29-02-2020
49	TMU Alumni Meet 2020	01-03-2020
50	MATLAB for Beginners	04 & 05-March-2020
51	Institute of Himalaya bio research technology Palampur (Visit)	04 & 07-March-2020
52	Radico Khaitan Ltd., Rampur (Visit)	04-03-2020
53	Workshop on Stress Management in Totality-A Practical Approach	05-03-2020
54	Aryabhata Research Institute of Observational Sciences, Nainital & G.B. Pant University Pant Nagar	06 & 07-March-2020

Table 4.5.1.4 Engineering Events Organized in Year 2019

S. No.	Event Name	Event Date
1	Socioeconomic Benefits through Propagation of Fundamental Science	04-10-2019
2	Data science using R-I. Nurture	05-10-2019
3	TRAINING ON DATA SCIENCE USING R Programming	10-10-2019
4	Workshop on Network Security and its Concepts	10-10-2019
5	SAMAGRA-2019", an Inter-Institutional Techno Cultural Fest	19-10-2019
6	Workshop on Intellectual Property Rights (IPR)	19-10-2019
7	Guest lecture on Big Bang and the Expanding Universe	23-10-2019
8	Workshop on introduction to python for beginners	07-11-2019
9	KVCH Oracle	15-11-2019
10	Automobile Engineering and IC Engine	18 & 19-11-19
11	8th IEEE SMART Conference -2019	22-23 Nov. 2019
12	Design and installation of Solar Photovoltaic System	02 & 03-12-19
13	IOT (ARDUINO)	17-07-2019
14	Induction Programme of all courses	01-08-2019
15	Technical Session for Agro Advisor.	22-08-2019
16	INDUCTION PROGRAMME	28-08-2019

17	Cisco Kit Distribution	29-08-2019
18	WORKSHOP ON OUTCOME BASED EDUCATION AND ACCREDITATION	07-09-2019
19	Workshop on advance concrete mix and technical presentation	14-09-2019
20	Workshop on Virtual Laboratories	14-09-2019
21	Inauguration of I-Mac Lab	17-09-2019
22	Two-day Workshop on Python	21,23-09-2019
23	Chakravyuh Business Competition	21-09-2019
24	PHP & JAVA certificate distribution	24-09-2019
25	National Seminar on Advanced Python	30-09-2019
26	IOT Workshop	15-16-02-2019
27	Machine Learning Using Python	21-02-2019
28	Institutional Dynamics Creation for Developing Academic Culture-NSS	22-02-2018
29	Alumni Talk	23-02-2019
30	Smart India Hackathon	01-05-03-2019
31	Expert Talk on FUZZY RULE APPROACHES USING MATLAB	13-03-2019
32	THEORY AND PRACTICE SESSION ON APPLICATION DEVELOPMENT USING ANGULAR JAVA	18-03-2019
33	Implementation of Machine Learning Algorithms using Python	28-03-2019 and 29-03-2019
34	International Conference on Advanced Computing-2019	26-04-2019

Table 4.5.1.5 Engineering Events Organized in Year 2018

S. No.	Event Name	Event Date
1	IEEE conference SMART-2018	23-24-11-2018
2	CAC LTD. (ANGULAR 5) Workshop	04-10-2018
3	Workshop on Mobile Application Development	16-10-2018
4	Workshop on Designing Network	26-10-2018
5	Expert Talk on Research Methodology	16-09-2018
6	Android Short Term Course	13-08-2018
7	Java Short Term Course	21-08-2018
8	Introduction to Data Science using Python & R tool	25-07-2018

4.4.2 Publication of technical magazines, newsletters, etc. (5) Institute Marks : 5.00

(The Department shall list the publications mentioned earlier along with the names of the editors, publishers, etc.)

Technical Magazine have been published twice in each semester

Table 4.4.2.1 List of Publication of technical magazines, newsletters, etc

Sr. No.	Technical Magazine	Month and Year	Editor	Publisher
1	Computing Vision	4 issues in 2017	Dr. R.K.Dwivedi	TMU
2	Computing Vision	4 issues in 2018	Dr. R.K.Dwivedi	TMU
3	Computing Vision	4 issues in 2019	Dr. R.K.Dwivedi	TMU
4	Computing Vision	4 issues in 2020	Dr. R.K.Dwivedi	TMU
5	Computing Vision	2 issues in 2021	Dr. R.K.Dwivedi	TMU
6	S & T Review	July 2020	Dr. R.K.Dwivedi	TMU
7	S & T Review	Jan 2021	Dr. R.K.Dwivedi	TMU
8	S & T Review	July 2021	Dr. R.K.Dwivedi	TMU
9	International Journal of Research Trends in Computer Science & Information Technology (IJRTCSIT) ISSN 2455-6513	Bi-Annual (Current Volume 7 Issue 1)	Dr. R.K.Dwivedi	TMU

4.4.3 Participation in inter-institute events by students of the program of study (10) Institute Marks : 10.00

(The Department shall provide a table indicating those publications, which received awards in the events/conferences organized by other institutes)

Table: 4.4.3.1 Participation in inter-institute events by students of the program of study

Event Name	Type of Event	Date	Duration	Organizer	Event/Tech Coordinator	Prize/Position
Apogee 2019	IOT and Network Security Workshop Media Mania	28/03/19 -01/04/19	5 Days	BITS Pilani	Mr. Rupal Gupta	2nd Prize
SAMAGRA 2019	An Inter-Institutional Techno Cultural Fest	19/10/2019	1 Day	I.T.S, Mohan Nagar, Ghaziabad	Mr. Rupal Gupta & Mr. Manish Tiwari	1st Prize (C-PROGRAMMING) 2nd Prize (CARTOONING) 1st Prize (JUST A MINUTE) 3rd Prize (DUET DANCE)
Virtual Lab Seminar	Virtual Laboratory Initiative by MHRD	14/09/2019	1 Day	IIT Kanpur	Mr. Rupal Gupta	
SIH Greater Noida.	Hackathon	24/01/2020	1 Day	Sharda university Greater Noida	Dr. Ashendra Saxena	
Toycathon - 2021	Aatma Nirbhar Bharat Abhiyan	22/06/2021 – 24/06/2021	3 Days	Ministry of Education & AICTE	Prof (Dr.) R. K. Dwivedi	

5 FACULTY INFORMATION AND CONTRIBUTIONS (200)

Total Marks 174.00

:

Sr. No	Name	PAN No.	University Degree	Date of Receiving Degree	Area of Specialization	Research Paper Publications	Ph.D Guidance	Faculty receiving Ph.D during the assessment year	Current Designation	Date (Designated as Prof / Assoc. Prof.)	Initial Date of Joining	Association Type	At present working with the Institution (Yes / No)	Date of Leaving	IS HOD?
1	RAKESH KUMAR DWIVEDI	AGGPD6595B	ME/M. Tech and PhD	03/10/2015	DATA STRUCTURES C DBMS JAVA PROGRAMMING AND ALGORITHMS	95	11	3	Professor	05/09/2016	22/08/2002	Regular	Yes		Yes
2	ASHENDRA KUMAR SAXENA	BDFPS4428B	MCA and PhD	28/06/2013	OPTIMIZATION TECHNIQUES CBNST BIG DATA AND ALGORITHMS	38	3	2	Associate Professor	01/03/2016	19/07/2003	Regular	Yes		No

3	RAJEEV KUMAR	ARAPK1985D	ME/M. Tech and PhD	22/06/2013	C BIG DATA CLOUD JAVA PROGRAMMING AND ALGORITHMS	70	4	0	Associate Professor	09/01/2018	12/08/2009	Regular	Yes		No
4	GULISTA KHAN	AYFPK2141K	ME/M. Tech and PhD	16/11/2019	WIRELESS SENSOR NETWORK	30	2	1	Assistant Professor		27/06/2011	Regular	Yes		Yes
5	RUPAL GUPTA	AKHPG6860B	M.E/M.Tech	01/12/2011	DATA STRUCTURES BIG DATA ALGORITHMS	12	4	0	Assistant Professor		22/08/2006	Regular	Yes		No
6	ANU SHARMA	BUVPS9295M	M.E/M.Tech	09/11/2011	Compiler Design, DBMS, Data Mining, Machine Learning, C, Software Engineering, Phython	27	0	0	Assistant Professor		20/12/2010	Regular	Yes		No
7	ARPIT JAIN	AHAPJ7773N	ME/M. Tech and PhD	26/12/2018	DATA STRUCTURE C PROGRAMMING DBMS AND SOFTWARE ENGINEERING	12	5	1	Associate Professor	15/03/2017	12/03/2012	Regular	Yes		No
8	RAHUL RATHORE	BLIPR0238M	M.E/M.Tech	09/09/2015	DBMS	12	0	0	Assistant Professor		03/08/2009	Regular	Yes		No
9	KAMAL KUMAR GOLA	APTPG0711Q	M.E/M.Tech	09/09/2015	ALGORITHMS AND SECURITY	35	0	0	Assistant Professor		17/08/2009	Regular	Yes		No
10	NAMIT GUPTA	AJMTG8118L	M.E/M.Tech	30/08/2012	NETWORKING	11	0	0	Assistant Professor		21/09/2009	Regular	Yes		No
11	NEERAJ KUMARI	AXZPK8094N	M.E/M.Tech	15/09/2014	Soft Computing, AI	18	0	0	Assistant Professor		16/07/2008	Regular	Yes		No
12	HUMERA AQEEL	BOWPA6944N	M.E/M.Tech	15/03/2018	OPERATING SYSTEM	3	0	0	Assistant Professor		03/10/2019	Regular	Yes		No
13	TUSHAR MEHROTRA	BYTPM8388K	M.E/M.Tech	18/07/2019	Machine Learning Optimization Algorithms	5	0	0	Assistant Professor		02/08/2019	Regular	Yes		No
14	SHAKTI KHUNDU	AKFPK3689J	ME/M. Tech and PhD	18/02/2019	NETWORKING	42	4	1	Associate Professor	18/02/2019	18/02/2019	Regular	Yes		No
15	AADITYA JAIN	ASVPJ6886G	M.E/M.Tech	24/12/2018	Computer Network Crytography Techniques	47	0	0	Assistant Professor		21/09/2019	Regular	Yes		No
16	ASHOK KUMAR	AUFPK0720J	ME/M. Tech and PhD	22/06/2019	SOFT COMPUTING	23	5	1	Associate Professor	01/08/2019	01/08/2019	Regular	Yes		No
17	R C TRIPATHI	AEOPT0964Q	ME/M. Tech and PhD	24/01/2015	SOFTWARE ENGINEERING	50	3	2	Professor	19/07/2019	19/07/2019	Regular	Yes		No
18	RATNESH KUMAR SHUKLA	BPFPS7973R	M.E/M.Tech	28/02/2014	IoT	12	0	0	Assistant Professor		11/11/2019	Regular	Yes		No
19	VIPIN KUMAR	BUUPK8871L	M.Sc. and PhD	10/11/2014	OPERATION RESEARCH	12	2	0	Assistant Professor		17/09/2010	Regular	Yes		No
20	AMIT KUMAR SHARMA	BKNPS2277K	M.Sc. and PhD	26/10/2012	PHYSICS	10	2	0	Associate Professor	01/07/2019	16/08/2013	Regular	Yes		No
21	VARUN KUMAR SINGH	BYSPS8008R	M.Sc. and PhD	17/10/2011	Inorganic CHEMISTRY	10	2	0	Associate Professor	01/07/2019	16/07/2013	Regular	Yes		No

22	PANKAJ GOSWAMI	ALMPG4563F	ME/M. Tech and PhD	23/02/2019	ANTENA MICROWAVE IOT AI AND ML	30	2	1	Associate Professor	29/07/2019	29/07/2019	Regular	Yes		No
23	GARIMA GOSWAMI	AYKPS2921C	ME/M. Tech and PhD	23/02/2019	POWER QUALITY AI AND NEURAL NETWORK	30	2	1	Associate Professor	29/07/2019	29/07/2019	Regular	Yes		No
24	NEHA ANAND	BNMPA4604G	M.Phil	27/06/2014	English Communication	12	0	0	Assistant Professor		17/09/2012	Regular	Yes		No
25	ARUN GUPTA	ASEPG5786D	M.E/M.Tech	17/06/2019	CAD CAM	3	0	0	Assistant Professor		19/07/2014	Regular	Yes		No
26	PRADEEP KUMAR VERMA	ANEPV4739L	M.E/M.Tech	08/06/2016	POWER SYSTEM	5	0	0	Assistant Professor		02/08/2010	Regular	Yes		No
27	SAKSHI SINGH	DBWPS8657B	M.E/M.Tech	14/08/2013	MICROWAVE	3	0	0	Assistant Professor		15/03/2011	Regular	Yes		No
28	AMBUJ KUMAR AGARWAL	AIVPA4092M	ME/M. Tech and PhD	28/06/2013	DATA STRUCTURES	12	0	0	Associate Professor	01/03/2017	14/09/2008	Regular	No	12/10/2019	No
29	VAIBHAV SHARMA	CFQPS0071C	M.E/M.Tech	06/06/2011	NETWORKING	2	0	0	Assistant Professor		08/08/2011	Regular	No	17/08/2019	No
30	DANISH ATHER	AGAPA6990K	ME/M. Tech and PhD	12/06/2012	DATA STRUCTURES	12	0	0	Associate Professor	01/08/2018	14/09/2008	Regular	No	21/03/2020	No
31	MEGHA SHARMA	AAUPU1341C	ME/M. Tech and PhD	18/03/2007	Marketing	3	0	0	Associate Professor	12/11/2017	02/11/2015	Regular	Yes		No
32	AJAY RASTOGI	APIPR1155C	M.E/M.Tech	01/07/2013	IoT	2	0	0	Assistant Professor		06/09/2008	Regular	Yes		No
33	AMIT KUMAR VISHNOI	BLAPK1482L	M.E/M.Tech	01/07/2013	DATA STRUCTURES	1	0	0	Assistant Professor		21/07/2008	Regular	Yes		No
34	PRIYANK SINGHAL	BNAPS9495M	M.E/M.Tech	02/12/2005	NETWORKING Software Engg & Testing	3	0	0	Assistant Professor		10/08/2006	Regular	Yes		No
35	Sunil Kumar	CQYPK7325Q	M.E/M.Tech	01/09/2015	Material Sci. & Engg	1	0	0	Assistant Professor		10/07/2015	Regular	Yes		No
36	Ajit Kumar	CNRPK2501E	PhD	12/02/2011	Fluid Dynamics	6	1	0	Associate Professor	01/07/2019	24/08/2012	Regular	Yes		No
37	Ajay Upadhyay	ABXPU8353L	PhD	17/11/2007	Laser Plasma interection	8	0	0	Associate Professor	01/03/2017	02/09/2013	Regular	Yes		No
38	Neeraj Kaushik	BLAPK6840A	M.Tech	28/11/2015	Electronics & Comm.	3	0	0	Assistant Professor		12/04/2010	Regular	Yes		No
39	Sandeep Verma	AEQPV2030P	PhD	12/12/2003	Indian Engg Litreature	5	0	0	Associate Professor	01/08/2013	01/08/2013	Regular	Yes		No
40	Asim Ahmad	AEEPA5184R	PhD	20/09/1983	Inorganic Chemistry	12	0	0	Professor	01/07/2019	01/07/2016	Regular	Yes		No
41	Indu Tripathi	AHWPT7270Q	M.Ed	22/04/2010	English Communication	8	0	0	Assistant Professor		14/09/2010	Regular	Yes		No
42	Alok Gahlot	ATAPG5212B	PhD	01/08/2011	Differential Geometry	8	0	0	Assistant Professor		04/02/2013	Regular	Yes		No
43	Parag Agarwal	ALMPG4563F	PhD	23/11/2013	Condensed Matter Physics	10	0	0	Associate Professor	01/07/2019	10/02/2017	Regular	Yes		No

5.1 Student-Faculty Ratio (SFR) (20)

Total Marks 20.00

Institute Marks : 20

UG

No. of UG Programs in the Department 1

B.TECH-COMPUTER SCIENCE & ENGINEERING						
Year of Study	CAY (2020-21)		CAYm1 (2019-20)		CAYm2 (2018-19)	
	Sanction Intake	Actual admitted through lateral entry students	Sanction Intake	Actual admitted through lateral entry students	Sanction Intake	Actual admitted through lateral entry students
2nd Year	60	6	60	6	60	5
3rd Year	60	6	60	5	60	6
4th Year	60	5	60	6	60	6
Sub-Total	**180**	**17**	**180**	**17**	**180**	**17**
Total	**197**		**197**		**197**	
Grand Total	197		197		197	

PG

No. of PG Programs in the Department 0

Grand Total			

SFR

No. of UG Programs in the Department 1

No. of PG Programs in the Department 0

Description	CAY(2020-21)		CAYm1 (2019-20)		CAYm2 (2018-19)	
Total No. of Students in the Department(S)	197	**Sum total of all (UG+PG) students**	197	**Sum total of all (UG+PG) students**	196	**Sum total of all (UG+PG) students**
No. of Faculty in the Department(F)	22	**F1**	15	**F2**	16	**F3**
Student Faculty Ratio(SFR)	8.9	**SFR1=S1/F1**	13.1	**SFR2=S2/F2**	12.25	**SFR3=S3/F3**
Average SFR	11.4	**SFR=(SFR1+SFR2+SFR3)/3**				
F=Total Number of Faculty Members in the Department (excluding first year faculty)						

Note: All the faculty whether regular or contractual (except Part-Time), will be considered. The contractual faculty (doing away with the terminology of visiting/adjunct faculty, whatsoever) who have taught for 2 consecutive semesters in the corresponding academic year on full time basis shall be considered for the purpose of calculation in the Faculty Student Ratio. However, following will be ensured in case of contractual faculty:

1. Shall have the AICTE prescribed qualifications and experience.
2. Shall be appointed on full time basis and worked for consecutive two semesters during the particular academic year under consideration.
3. Should have gone through an appropriate process of selection and the records of the same shall be made available to the visiting team during NBA visit

5.1.1. Provide the information about the regular and contractual faculty as per the format mentioned below:

	Total number of regular faculty in the department	Total number of contractual faculty in the department
CAY(2020-21)	22	0
CAYm1(2019-20)	15	0
CAYm2(2018-19)	16	0

Average SFR for three assessment years : 10.52

Assessment SFR : 20

5.2 Faculty Cadre Proportion (20)

Total Marks 20.00

Institute Marks : 20.00

Year	Professors		Associate Professors		Assistant Professors	
	Required F1	Available	Required F2	Available	Required F3	Available
CAY(2020-21)	1.00	2.00	2.00	6.00	6.00	14.00
CAYm1(2019-20)	1.00	1.00	2.00	4.00	6.00	10.00
CAYm2(2018-19)	1.00	1.00	2.00	6.00	6.00	09.00
Average Numbers	1.00	1.33	2.00	5.33	6.00	11.00

Cadre Ratio Marks [(AF1 / RF1) + [(AF2 / RF2) * 0.6] + [(AF3 / RF3) * 0.4]] * 10 : 20.00

5.3 Faculty Qualification (20)

Total Marks 20.00

Institute Marks : 20.00

	X	Y	F	FQ = 2 x [(10X + 4Y) / F)]
2020-21(CAY)	9	13	9.00	31.55
2019-20(CAYm1)	5	10	9.00	20.00
2018-19(CAYm2)	6	10	9.00	22.22

Average Assessment 24.59

5.4 Faculty Retention (10)

Total Marks 4.00

Institute Marks : 4.00

Description	2019-20 (CAYm1)	2020-21 (CAY)
No of Faculty Retained	13	15
Total No of Faculty	15	22
% of Faculty Retained	87	100

Average : 73.00

Assessment Marks : 4.00

5.5 Faculty competencies in correlation to Program Specific Criteria (10)

Total Marks 10.00

Institute Marks : 10.00

Table 5.5 Faculty Details

S.No.	Name of Faculty	Subject Expertise	Research Expertise	No. of Publication
1	Dr Rakesh Kumar Dwivedi	Data Structure, C, DBMS, JAVA programming and Algorithms	Image Processing , Wireless sensor network	95
2	Dr Ashendra Kumar Saxena	Optimization Techniques, CBNST	Big Data and Algorithms	38
3	Dr. R C Tripathi	Software Engineering	Software Engineering	50
4	Dr. Gulista Khan	Cryptography and Information Security, Data Structure	Wireless sensor network	30
5	Dr Rajeev Kumar	C, Cloud JAVA programmi ng and Algorithms	Big Data,	70
6	Dr Arpit Jain	Data Structure, C programming	DBMS and Software Engineering	12
7	Dr. Shakti Kundu	Software Engg., Digital Marketing	Data Mining	42
8	Dr. Ashok Kumar	Soft Computing	Soft Computing, DIP, Machine Learning	23
9	Mr. Kamal Kumar Gola	Cryptography and Information Security, Data Structure	WSN, Information Security	35
10	Mr. Rahul Rathore	TOC, DBMS	Cloud Computing	12
11	Mr. Rupal Gupta	Data Structures	Big Data, Algorithms	12

12	Ms Anu Sharma	Compiler Design, C programming, DBMS and Software Engineering	Data Mining	27
13	Ms. Humera Aqeel	Operating System	Operating System	3
14	Ms. Neeraj Kumari	Soft Computing, TOC	machine learning ,Deep Learning	18
15	Mr. Namit Gupta	Networking	Wireless Sensor Network	11
16	Mr. Tushar Mehrotra	Operating System	Operating System	5
17	Mr. Aaditya Jain	DBMS, Computer Networks, Cryptography	Wireless Sensor Network, Machine Learning	47
18	Mr. Ratnesh Kumar Shukla	Machine Learning, Deep Learning, DIP	IoT	12

5.6 Innovations by the Faculty in Teaching and Learning (10)

Total Marks 10.00

Institute Marks : 10.00

Faculty members provide quality study materials to enrich students. Faculty of Engineering provides outcome based education to studnets. Here we provide Holistic education. Mode of teaching in this institute is not only limited to the traditional Chalk & Talk methods, But also an amalgamation of the modern technology (e.g. power point presentation, audio visual teaching etc.)

The course files (including Course Contents,Lecture Plans, handouts, Assignments, Previous Year Question Papers, Question Bank) are distributed among the students by the subject teacher well in advance before commencement of the class.
Faculty shares the study materials among the students via e-mail, websites, whatsapp group etc.
Faculty members have their YouTube channels for sharing videos.
Faculty have undergone Intensive Teaching Workshop **(ITW)** for understanding better teaching methods.
Students are encouraged to visit NPTEL/SWAYAM lectures and browse different internet sites to increase their knowledge about the subject. Moreover, through these activities students acquire relevant knowledge which is beyond the syllabus.
Smart Class room facilities are provided to students for the better understanding of the concepts.
Arranging live Seminars/Webinars by experts and eminent Professors. Displaying Videos which effectively communicate the working of actual engineering solutions and their impact.
Online classes and examination are taken in online mode through Great Learning (Olympus) platform. Students are also asked to submit assignments on the same plateform.
We have uploaded training methods, teaching aids, tools, PPT presentation, case studies and manuals in our Intranet portal facility website (Olympus) which can develop the student's and leads to self learning.
The faculty members are encouraged to participate in short term courses, staff development programs and workshops on advanced topics to keep pace with the advanced level of knowledge and skills.
Over the past years the faculties have been participating/presenting papers in national/international conferences and publish their articles in national/international journals to enrich their knowledge.
New courses are developed by the faculty as per the demand by the industry to bridge the gap.
Students got the exposure by doing Simulation of experiments Virtual Labs.
TMU has introduced new training department which will develop essential basic aptitude as well as soft skill set in students and faculty members, thus forming Centre for Teaching Learning and Development (CTLD).
The biggest resource for self-learning is obviously the library. The college library not only possesses plenty of books to meet the students' syllabus oriented needs, but it also houses numerous books by eminent national and international authors on a variety of topics which students may regularly access to sharpen and broaden their knowledge.
The library also subscribes to a host of online and printed journals, which are also made readily available to the students.
Faculty assigns field projects to students to connect them with community and have checkthe outcome of education provided.
Faculty is encouraged to do projects funded by govt. of India.
Faculty does various social activities.
Faculty encourages students to participate in Hackathon and mentor students in various competitions.

5.7 Faculty as participants in Faculty development/training activities/STTPs (15)

Total Marks 15.00

Institute Marks : 15.00

Name of the faculty	Max 5 Per Faculty		
	2019-20(CAYm1)	2018-19(CAYm2)	2017-18(CAYm3)
Dr. R.K.Dwivedi	3.00	0.00	3.00
Dr. Ashendra Kumar Saxena	0.00	5.00	5.00
Mr. Kamal Kumar Gola	3.00	3.00	0.00
Dr. R.C.Tripathi	5.00	5.00	3.00
Mr. Rahul Rathore	5.00	0.00	0.00
Dr. Gulista Khan	3.00	5.00	5.00
Dr. Rajeev Kumar	5.00	5.00	5.00
Mr. Rupal Gupta	5.00	5.00	0.00
Ms. Anu Sharma	5.00	5.00	0.00
Ms. Neeraj Kumari	0.00	5.00	5.00
Mr. Namit Gupta	0.00	3.00	3.00
Mr. Tushar Mehrotra	5.00	5.00	0.00
Dr. Shakti Kundu	5.00	3.00	5.00
Dr. Ashok Kumar	0.00	5.00	0.00
Mr. Aaditya Jain	5.00	5.00	5.00
Mr. Ratnesh Kumar Shukla	5.00	5.00	3.00
Sum	54.00	64.00	42.00
RF = Number of Faculty required to comply with 20:1 Student Faculty Ratioas per 5.1	9.00	9.00	9.00
Assessment [3*(Sum / 0.5RF)]	36.00	42.67	28.00

Average assessment over 3 years: 35.56

5.8 Research and Development (75)

Total Marks 55.00

5.8.1 Academic Research (20) Institute Marks : 20.00

5.8.1 Academic Research (20)

Number of Quality Publications in Refereed/SCI Journals, Citations, International & National Journals, Conferences & Books/Book Chapters Etc. (15)

Academic Research Includes Research Paper Publications, Ph.D. Guidance, and Faculty Receiving Ph.D. During The Assessment Period.

Table 5.8.1.1 : List of paper publications by Faculty

Academic Year	2021	2020	2019	2018
No. Of Publication	30	96	74	53

Table 5.8.1.2 : List of paper publication by faculty (Jan - June 2021)

Sr. No	Name of Faculty	Paper Title	Journal Name	Vol. No, Issue No.	Indexing
1	Dr. Varun kumar Singh	Excess Molar Enthalpies of acetylene tetrachloride with cyclohexanone, pyrrolidin-2one , methyl ethyl ketone, and acetophenone at the temperature 303.15K Vol.1, Page:43-51	TMU Journal of Basic & Applied Chemistry	Vol. 40, Issue 1	ICI
2	Dr. Amit Kumar Sharma	Dye Removal Ability of Pure and Doped Graphitic Carbon Nitride	Current Analytical Chemistry	-	Scopus, SCI
3	Dr. Amit Kumar Sharma	Photoluminescence and temperature dependent ferroelectric property of MgTiO3 synthesized via solid state reaction	Advances in Natural Sciences	Vol. 12, Issue 1	WOS, Scopus
4	Dr. Pankaj Goswami	Self-Adaptive Learning Based Controller to Mitigate PQ Issues in Internet of Things Devices	International Transactions on Electrical Energy Systems (WILEY)	Vol. 31, Issue 5	SCI, Scopus, WOS
5	Dr. Pankaj Goswami	Microstrip Antenna with SVASTU Slot for UWB Applications	Lecture Notes in Electrical Engineering (Springer Nature)	Vol. 75, Issue 2	SCI, Scopus, WOS
6	Dr. Pankaj Goswami	A Corner Truncated Fractal Slot Ultrawide Spectrum Sensing Antenna for Wireless Cognitive Radio Sensor Network	International Journal of Communication Systems (Wiley)	Vol. 34, Issue 4	SCI, Scopus, WOS
7	Dr. Garima Goswami	Self-Adaptive Learning Based Controller to Mitigate PQ Issues in Internet of Things Devices	International Transactions on Electrical Energy Systems (WILEY)	Vol. 31, Issue 5	SCI, Scopus, WOS
8	Dr. Garima Goswami	A Corner Truncated Fractal Slot Ultrawide Spectrum Sensing Antenna for Wireless Cognitive Radio Sensor Network	International Journal of Communication Systems	Vol. 34, Issue 4	SCI, Scopus, WOS

9	Mr. Arun Gupta	Preparation and mechanical properties of Nanoclay-MWCNT/Epoxy hybrid nano composites	Journal of Applied Research in Technology & Engineering	Vol.2, No 1	Scopus
10	Dr Arpit Jain	Desmogging of still smoggy images using a novel channel prior	Ambient Intelligence and Humanized Computing	Vol. 12	SCI
11	Ms. Neeraj Kumari	Hybridized approach of image segmentation in classification of fruit mango using BPNN and discriminant analyzer	Multimedia Tools and Applications	Vol. 80	Scopus
12	Mr. Ratnesh Kumar Shukla	comparative analysis of machine learning based approaches for face detection and recognition	Journal of Information Technology Management (JITM)	Vol.13, No.1	Scopus
13	ANU SHARMA	Big Data Analytics Tool Hive	Science, Technology and Development	Volume X Issue III	Google Scholar
14	ANU SHARMA	Literature Review of Business Intelligence	Compliance Engineering Journal	vol2, issue 5, may 2021	Google Scholar
15	Dr. Ashok Kumar	Desmogging of still smoggy images using a novel channel prior	Journal of Ambient Intelligence and Humanized Computing	Volume 12, Issue 1	SCIE
16	Tushar Mehrotra	Email Spam Filtering Technique from Various Perspectives Using Machine Learning Algorithms	International Conference on Machine Intelligence and Data Science Applications (MIDAS 2020)	Conference Proceeding	Springer, Singapore
17	Namit Gupta	Performance analysis of DSDV and OLSR wireless sensor network routing protocols using FPGA hardware and machine learning	Multimedia Tools and Applications	80(14)	SCI
18	Dr. Arpit Jain	A Comparative Analysis of Machine Learning Algorithms for Detection of Organic and Nonorganic Cotton Diseases."	Mathematical Problems in Engineering	-	SCI,WoS, UGCCARE
19	Dr. Arpit Jain	Performance analysis of DSDV and OLSR wireless sensor network routing protocols using FPGA hardware and machine learning.	Multimedia Tools and Applications	Vol. 80, Issue 14	SCI,WoS, UGCCARE
20	Dr. Arpit Jain	Desmogging of still smoggy images using a novel channel prior	Journal of Ambient Intelligence and Humanized Computing	Vol. 12, Issue 1	SCI,WoS, UGCCARE

21	Dr. Arpit Jain	Image smog restoration using oblique gradient profile prior and energy minimization.	Frontiers of Computer Science	Vol. 15, Issue 6	SCI,WoS, UGCCARE
22	Ms. Neeraj Kumari	Hybridized approach of image segmentation in classification of fruit mango using BPNN and discriminant analyzer	Multimedia Tools Appl,2021	Vol. 80, Issue 14	SCI
23	Ms. Neeraj Kumari	Automated grading of mangoes based on surface defect detection using a combined approach of image segmentation	Environment Conservation Journal,2021		WOS
24	Dr. Rajeev Kumar	A Survey of Lung Cancer Detection Using Machine Learning Techniques for Improving Classification Performance.	World Journal of Engineering Research and Technology (WJERT)	Volume 7, Issue 4	Google Scholar, ICI
25	Dr. Rajeev Kumar	Review of Chronic Inflammation and long term effects on health using Machine Learning Algorithms	International Journal of Computer Sciences and Engineering	Volume 9 , Issue 6	Scopus, WOS
26	Dr. Rajeev Kumar	A Framework of Web Mining Algorithm-Based Hidden Pattern in India E-Government Application Using Blockchain Technology	International Journal of Applied Engineering and Management Letters (IJAEML)	Volume 5, Issue1	UGC
27	Dr. Rajeev Kumar	Performance analysis of DSDV and OLSR wireless sensor network routing protocols using FPGA hardware and machine learning	Multimedia Tools and Applications	Vol. 80, Issue 14	SCI, WoS, UGCCARE
28	Dr. RC Tripathi	Network traffic based Detection of Repackaged Android apps via Mobile Fog Computing	IEEE Scopus Indexed Int. Nat. Conf. SMART-2021, TMU	SMART-2021 Int. Nat. Conf. Proceedings	Scopus
29	Dr. RC Tripathi	Predicting Diabetes using CNN for various activation functions - A Comparative Study	IEEE Scopus Indexed Int. Nat. Conf. SMART-2021, TMU	SMART-2021 Int. Nat. Conf. Proceedings	Scopus
30	Dr. RC Tripathi	Gesture Language Interpreter Using Python for Physical Impaired	IEEE Scopus Indexed Int. Nat. Conf. SMART-2021, TMU	SMART-2021 Int. Nat. Conf. Proceedings	Scopus

Table 5.8.1.3 : List of paper publication by faculty in year 2020

Sr. No	Name of Faculty	Paper Title	Conference/Journal Name	Vol. No., Issue No.	Indexing
1	Dr. Gulista Khan	KKG-512: A New Approach for Kryptos Key Generation of Size 512 Bits Using Plaintext	International Conference on Intelligent Computing and Smart Communication 2019	Conference Proceeding	Scopus
2	Dr. Gulista Khan	Efficient Techniques for Data Aggregation in Underwater Sensor Networks.	Journal of Electrical Systems	Vol 16, Issue 1	Scopus
3	Dr. Gulista Khan	Effect On Lifetime Of Routing Protocols By Means Of Different Connectivity Schemes	IJSTR	Vol. 8 No 12	Scopus
4	Dr. Gulista Khan	Circular Queue Based Data Encryption Algorithm Using 512 Random Bits.	Journal of Information Assurance & Security	Vol 15, Issue 1	Web of Science
5	Mr. Kamal Kumar Gola	KKG-512: A New Approach for Kryptos Key Generation of Size 512 Bits Using Plaintext	International Conference on Intelligent Computing and Smart Communication 2019	Conference Proceeding	Scopus
6	Mr. Kamal Kumar Gola	Efficient Techniques for Data Aggregation in Underwater Sensor Networks.	Journal of Electrical Systems	Vol 16, Issue 1	Scopus
7	Mr. Kamal Kumar Gola	Void hole avoidance routing algorithm for underwater sensor networks	IET Communications	Vol 14, Issue 21	Web of Science, Scopus
8	Mr. Kamal Kumar Gola	Circular Queue Based Data Encryption Algorithm Using 512 Random Bits.	JIAS	Vol 15, Issue 1	Web of Science
9	Mr. Kamal Kumar Gola	Analysis of Machine Learning for Processing Big Data in High Performance Computing: A Review	EAI Endorsed Transactions on Cloud Systems	Vol 6, Issue 19	Web of Science
10	Mr. Rahul Rathore	KKG-512: A New Approach for Kryptos Key Generation of Size 512 Bits Using Plaintext	International Conference on Intelligent Computing and Smart Communication 2019	Conference Proceeding	Scopus
11	Mr. Rahul Rathore	Realism of Contemporary Society: A Mirror to Predominant Practices	International Journal of Psychosocial Rehabilitation	Vol 24, Issue 8	Scopus
12	Dr. Varun kumar Singh	Excess Molar Volumes of Binary Liquid Mixtures of Cyclohexanone + Dichloromethane, + Trichloromethane, + 1,1,1-Trichloroethane and 1,2 Dichloroethane at 308.15	Bulletin of Pure & applied Sciences Sec C (Chemistry)	Vol. 39, Issue 1	ICI
13	Dr. Vipin kumar	An analysis between Installation cost & payback through on grid Solar Energy System	Mukt Shabd Journal	Vol. 9, Issue 5	UGC
14	Dr. Vipin kumar	A Study on the Role of Operation Research	Mukt Shabd Journal	Vol. 9, Issue 5	UGC
15	Dr. Vipin kumar	Lax operator approach for global existence and uniqueness condition with kac van-moerbeke hierarchy	Advances in mathematics: scientific journal	Vol. 9, Issue 3	Scopus
16	Dr. Vipin kumar	Optimization model and its applications to linking assignments of terminal reliability in computer communication network	Dogo rangsang research journal	Vol. 10, Issue 6	UGC
17	Dr. Vipin kumar	Economic study of 3 kw on-grid solar photovoltaic system for residence in moradabad	International journal of advanced science and technology (ijast)	Vol. 29, Issue 3	Scopus
18	Dr. Vipin kumar	Analysis of tri-cum biserial bulk queue model connected with a common server	Journal of mathematical and computational science	Vol. 10, Issue 6	Scopus

19	Dr. Vipin kumar	A method on the false discovery distribution for controlling quantities	Journal of critical reviews	Vol. 7, Issue 16	Scopus
20	Ms. Sakshi Singh	Miniaturized Triband Circular Patch Antenna For X Band,Ku Band and K Band Applications	9th IEEE International Conference SMART2020	Conference Proceeding	Google Scholar
21	Ms. Sakshi Singh	Automatic Train Protection (ATP) and Signaling with Accident Avoidance System for Indian Railways	International Journal of Innovative Technology and Exploring Engineering (IJITEE)	Vol. 9, Issue 6	Scopus
22	Ms. Sakshi Singh	A Review Paper on Rectangular Microstrip Patch Antenna	National conference Industry 4.0(NCI-4.0), TMU	Conference Proceeding	Google Scholar
23	Dr. Pankaj Goswami	Compact Corner Truncated Fractal Slot Antenna for Cognitive Radio Sensor Network	IETE Journal of Research	Latest Articles	SCI, Scopus, WOS
24	Dr. Pankaj Goswami	Power quality improvement at nonlinear loads using transformer-less shunt active power filter with adaptive neural fuzzy interface system supervised PID controllers.	International Transactions on Electrical Energy Systems (WILEY)	Vol. 30, Issue 5	SCI, Scopus, WOS
25	Dr. Pankaj Goswami	Frequency Reconfigurable Multiband Antenna for IoT Applications in WLAN, Wi-Max, and C-Band.	Progress In Electromagnetics Research	Vol. 106	Scopus
26	Dr. Pankaj Goswami	A Compact Frequency Reconfigurable Printed Antenna for WLAN, WiMax Multiple Applications	Progress In Electromagnetics Research	Vol. 102	Scopus
27	Dr. Pankaj Goswami	ANFIS Supervised PID Controlled SAPF for Harmonic Current Compensation at Nonlinear Loads	IETE Journal of Research	Latest Articles	SCI, Scopus, WOS
28	Dr. Pankaj Goswami	Truncated T parasite staircase fractal U-slot antenna for multiple advance internet of things applications	Microwave and Optical Technology Lettders (WILEY)	Vol. 62, Issue 2	SCI, Scopus, WOS
29	Dr. Pankaj Goswami	Trident Shape Ultra-Large Band Fractal Slot EBG Antenna for Multipurpose IoT Applications	Progress In Electromagnetics Research C,	Vol .96	Scopus
30	Dr. Pankaj Goswami	Wideband Sensing Antenna for Smart Cognitive Radio Applications	IEEE, International Conference on System Modeling & Advancement in Research Trends, 2020, TMU	Conference Proceedings	Scopus
31	Dr. Pankaj Goswami	Artificial Intelligence based PV-Fed Hybrid Shunt Active Power filter for IOT Applications	IEEE, International Conference on System Modeling & Advancement in Research Trends, 2020, TMU	Conference Proceedings	Scopus

32	Dr. Garima Goswami	Compact Corner Truncated Fractal Slot Antenna for Cognitive Radio Sensor Network	IETE Journal of Research	Latest Articles	SCI, Scopus, WOS
33	Dr. Garima Goswami	Power quality improvement at nonlinear loads using transformer-less shunt active power filter with adaptive neural fuzzy interface system supervised PID controllers.	International Transactions on Electrical Energy Systems (WILEY)	Vol. 30, Issue 5	SCI, Scopus, WOS
34	Dr. Garima Goswami	Frequency Reconfigurable Multiband Antenna for IoT Applications in WLAN, Wi-Max, and C-Band.	Progress In Electromagnetic Research	Vol. 106	Scopus
35	Dr. Garima Goswami	ANFIS Supervised PID Controlled SAPF for Harmonic Current Compensation at Nonlinear Loads	IETE Journal of Research	Vol. 102	Scopus
36	Dr. Garima Goswami	Truncated T parasite staircase fractal U-slot antenna for multiple advance internet of things applications	Microwave and Optical Technology Lettders (WILEY)	Latest Articles	SCI, Scopus, WOS
37	Dr. Garima Goswami	Trident Shape Ultra-Large Band Fractal Slot EBG Antenna for Multipurpose IoT Applications	Progress In Electromagnetics Research C,	Vol. 62, Issue 2	SCI, Scopus, WOS
38	Dr. Garima Goswami	Wideband Sensing Antenna for Smart Cognitive Radio Applications	IEEE, International Conference on System Modeling & Advancement in Research Trends	Vol .96	Scopus
39	Dr. Garima Goswami	Artificial Intelligence based PV-Fed Hybrid Shunt Active Power filter for IOT Applications	IEEE, International Conference on System Modeling & Advancement in Research Trends, 2020	Conference Proceedings	Scopus
40	Dr Rakesh Kumar Dwivedi	Analyzing Performance of Various Clustering Algorithms for Social Network Dataset	ICIM, Bhatinda	Conference Proceeding	Google Scholar
41	Dr Rakesh Kumar Dwivedi	Hybridized approach of image segmentation in classification of fruit mango using BPNN and discriminant analyzer	Multimedia Tools and Applications	Vol. 80, Issue 14	SCI,WoS, UGCCARE
42	Dr Rakesh Kumar Dwivedi	Secure PDF Text Steganography by Transforming Secret Into Imperceptible Coding	International Journal of Recent Technology and Engineering (IJRTE)	Volume-8 Issue-5	Scopus
43	Dr Rakesh Kumar Dwivedi	"Non-destructive classification of fruit mango based on extracted color–geometric features and used sample size in training phase of machine learning"	Journal of Xidian University	Vol. 14, Issue 4	SCOPUS
44	Mr. Ratnesh Kumar Shukla	A Machine Learning Approaches on Face Detection and Recognition	Solid State Technology	Vol. 63 No. 5 (https://solidstatetechnology.us/index.php/JSST/issue/view/48)	Scopus
45	Dr Ashendra Kumar Saxena	A Novel PDF Steganography Optimized Using Segmentation Technique	International Journal of Information Technology (Singapore), 2020, 12(4), pp.	Vol. 12 No. 4	Scopus

46	Dr Ashendra Kumar Saxena	Secure PDF Text Steganography by Transforming Secret Into Imperceptible Coding	International Journal of Recent Technology and Engineering (IJRTE)	Vol. 5 No. 8	Scopus
47	Dr Ashendra Kumar Saxena	An Enhancement Detection and Recovery Architecture for Routing Protocols in VANETs	International Journal of Advanced Science and Technology	Vol. 29 No. 10	Scopus
48	Dr Rajeev Kumar	Review on Machine Learning algorithm in Cancer prognosis and prediction	International Journal of All research Education & Scientific Methods	Vol 8, Issue6	Google Scholar
49	Dr Rajeev Kumar	Time Critical Applications Protocols and Design Issues in Underwater Wireless Sensor Networks	Journal of Xidian University	Vol 14, Issue 4	Scopus
50	Dr Rajeev Kumar	Analysis of Collaborative and Convenient E-Learning on Cloud Computing	2020 International Conference on Smart Electronics and Communication (ICOSEC), 2020	Conference Proceedings	Scopus
51	Dr Rajeev Kumar	Interpreting the Nature of Rainfall with AI and Big Data Models	*2020 International Conference on Intelligent Engineering and Management (ICIEM)*, London, United Kingdom, 2020	Conference Proceedings	Scopus
52	Dr Rajeev Kumar	Taxonomy of Link Based web Spammers using Mining Optimized PageRank Algorithm for e-Governance	*International Conference on Intelligent Engineering and Management (ICIEM)*, London, United Kingdom, 2020	Conference Proceedings	Scopus
53	Dr Rajeev Kumar	Data Science And Its Application In Heart Disease Prediction	International Conference on Intelligent Engineering and Management (ICIEM), London, United Kingdom, 2020	Conference Proceedings	Scopus
54	Ms. Neeraj Kumari	"Non-destructive classification of fruit mango based on extracted color–geometric features and used sample size in training phase of machine learning"	Journal of Xidian University	Vol. 14, Issue 4	SCOPUS
55	Mr. Pradeep Kumar Verma	An analysis between Installation cost & payback through on grid Solar Energy System	Mukt Shabd Journal	Volume IX Issue V, MAY-2020, Page 1249-1255	UGC
56	Mr. Pradeep Kumar Verma	A Study on the Role of Operation Research	Mukt Shabd Journal	Volume IX Issue V, MAY-2020, Page 2296-2301	UGC
57	Mr. Pradeep Kumar Verma	Lax operator approach for global existence and uniqueness condition with kac van-moerbeke hierarchy	Advances in Mathematics: Scientific Journal	Volume 9 (2020), no.3, Page-751–756	Scopus
58	Mr. Pradeep Kumar Verma	optimization model and its applications to linking assignments of terminal reliability in computer communication network	Dogo Rangsang Research Journal	Volume-10, Issue-6, No.-9, June-2020, Page 267-271	UGC
59	Ms. Neha Anand	Cinematizing Bhagat:A Journey of Chetan Bhagat from Fiction to Silver Screen	Test Engineering& Management	Vol. 83	Scopus
60	Ms. Neha Anand	Realism of Contemporary Society: A Mirror to Predominant Practices	International Journal of Psychological Rehabilitation	Vol. 24, Issue 8	Scopus

61	Ms. Neha Anand	Prominence of Soft Skills: Edification beyond Academics	Dogo Rangsang Research Journal	Vol. 10, Issue 7	UGC
62	Ms. Neha Anand	One Indian Girl: An Exemplification of Be Who You are and Say What you Feel	International Journal of Psychological Rehabilitation	Vol. 24, Issue 5	Scopus
63	Ms. Neha Anand	Discovering the chronicle of Inter Caste Marriage Shackle of Narrow Mindedness	PalArchs Journal of Archaeology of Egypt/Egyptology	-	Scopus
64	ANU SHARMA	Performance Comparison of Classification Models for Diabetes Prediction	SMART 2020	Conference Proceeding	Scopus
65	ANU SHARMA	Analysis of Social Network using data mining techniques	SMART 2020	Conference Proceeding	Scopus
66	Dr. Ashok Kumar	A Comparative Study on Sentiment Analysis Approaches and Methods	International Conference on System Modelling & Advancement on Research Trends	IEEE Conference Proceeding	Scopus
67	Dr. Ashok Kumar	Review Paper for Detection of COVID-19 from Medical Images and/ or Symptoms of Patient using Machine Learning Approaches	International Conference on System Modelling & Advancement on Research Trends	IEEE Conference Proceeding	Scopus
68	Aaditya Jain	Deep Learning Approaches for Activity Recognition	Int. J. of Control and Automation	Vol13 Issue 4	Scopus
69	Aaditya Jain	Transfer Learning Based Activity Recognition Using ResNet	Int. J. of Advanced Trends in Computer	Vol 9, Issue 4	Scopus
70	Aaditya Jain	A Decision Support System for Effective Academic Analysis by using the concepts of Data Mining	Int. J.of Emerging Trends in Engineering Research	Vol 8, Issue 9	Scopus
71	Aaditya Jain	CFRP Enabled Novel Approach to Strengthen the Concrete Structures	Psychology and Education Journal	Vol 57, Issue 9	Scopus
72	Aaditya Jain	Energy Efficient Routing Protocols for Wireless Sensor Networks	National Conference on Industry 4.0(NCI-4.0)	Conference Proceeding	Google Scholar
73	Aaditya Jain	Various Attacks And Possible Solutions for Internet Security	National Conference on Industry 4.0(NCI-4.0)	Conference Proceeding	Google Scholar
74	Tushar Mehrotra	Artificial Intelligence and its Impact: A Review	International Journal of Research Trends in Computer Science & Information Technology (IJRTCSIT)	Volume 6, Issue 2	Google Scholar
75	Tushar Mehrotra	Social Aspects of Friend Identification and Profile Ranking in Internet of Things Era	National Conference on Industry 4.0(NCI-4.0)	Conference Proceeding	Google Scholar
76	Namit Gupta	Introducing 5G a new Technology for upcoming Era	ICAC-2020	Conference Proceeding	Google Scholar
77	Namit Gupta	Artificial Intelligence and Human Intelligence	NCI-2020	Conference Proceeding	Google Scholar
78	Namit Gupta	Artificial Intelligence and its Application in Different Areas	NCI-2020	Conference Proceeding	Google Scholar
79	Namit Gupta	To Overcome Network Problem using Network-on-chip	NCI-2020	Conference Proceeding	Google Scholar

80	Namit Gupta	Big Data In Health Care	NCI-2020	Conference Proceeding	Google Scholar
81	Dr. Arpit Jain	Quantumanddual-treecomplexwavelettransformbasedimagewatermarking	International Journal of Modern PhysicsB	Vol.34, No.04	SCI,WoS, UGCCARE
82	Mr. Rupal Gupta	Home & Enterprise Security Solutions Using Vision Intelligence (https://www.researchgate.net/publication/339987810_Home_Enterprise_Security_Solutions_Using_Vision_Intelligence?_sg=5HKBnDJZSrLI3fWXOdITZNb70fiRlF9wAsOcI2CryaknlVaRk2CDA43ezzR4pp6frK-zxSy-xHMreC_ReJbpxUY4DZCYwiCZTZSCs3Oq.6NUS_oMOWbxSehCfPRqYeGsEj_Qzt2_IRQMUO3A5IDAbd7qkLPAe501i6250hxh-XM97IvWk89VYR3WU_TyVfA)	National Conference On Industry 4.0 2020	Conference Proceeding	Google Scholar
83	Dr. Shakti Kundu	A Comparative Study on Print Production Workflow Systems	Journal of Xi'an University of Architecture& Technology**(JXAT)**, Xian, Shaanxi, China	12(12)	Scopus
84	Dr. Shakti Kundu	An Automation Perspective of Print Production Workflow System	International Journal of Innovative Technology and Exploring Engineering **(IJITEE)**	9(3)	Scopus
85	Dr. Shakti Kundu	A Comparative Study on Sentiment Analysis Approaches and Methods	Proceedings of 9th International Conference on System Modelling & Advancement on Research Trends (SMART)	Conference Proceeding	Scopus
86	Dr. Shakti Kundu	Application of IoT Products in Smart Cities of India	Proceedings of 9th International Conference on System Modelling & Advancement on Research Trends (SMART)	Conference Proceeding	Scopus
87	Dr. Shakti Kundu	Review of Detection of COVID-19 from medical images and/ or symptoms of patient using Machine Learning Approaches	Proceedings of 9th International Conference on System Modelling & Advancement on Research Trends (SMART)	Conference Proceeding	Scopus
88	Dr. RC Tripathi	Depth Distortion Score Estimation in 3-D Image Retargeting Using Disparity "	IEEE Scopus Indexed Int. Nat. Conf. 2020	SMART-2020 Conference Proceeding	Scopus
89	Dr. RC Tripathi	"Cloud Computing: Analysis of Top 5 CSP's SAAs, Paas, IAAS, Platforms "	IEEE Scopus Indexed Int. Nat. Conf. 2020	SMART-2020 Conference Proceeding	Scopus
90	Dr. RC Tripathi	"Cloud Computing: Comparison and Analysis of Cloud Service Providers- AWS, Microsoft & Google"	IEEE Scopus Indexed Int. Nat. Conf. 2020	SMART-2020 Conference Proceeding	Scopus
91	Dr. RC Tripathi	"A Comparative Study of Implementing Innovation in Education Sector due to COVID-19"	IEEE Scopus Indexed Int. Nat. Conf. 2020	SMART-2020 Conference Proceeding	Scopus
92	Dr. RC Tripathi	"Depth Accuracy Determination in 3-D Stereoscopic Image Retargeting"	IEEE Scopus Indexed Int. Nat. Conf. 2020	SMART-2020 Conference Proceeding	Scopus
93	Dr. RC Tripathi	A Comprehensive Survey of IT Sectors Affected by COVID-19"	IEEE Scopus Indexed Int. Nat. Conf. 2020	SMART-2020 Conference Proceeding	Scopus
94	Dr. RC Tripathi	"Performance of Internet of Things (IOT) Based Health Care Services & It's Importance: Issues & challenges "	Ist International Conference on Intelligent Communication & Computational Research	SSRN- ELSEVIER International Journal bearing pid3565876	ELSEVIER

95	Dr. RC Tripathi	"Solving Knapsack Problem with Genetic Algorithm Approach"	I[st] International Conference on Intelligent Communication & Computational Research (ICICCR-2020)	SSRN- ELSEVIER International Journal bearing pid3565876	ELSEVIER
96	Dr. RC Tripathi	"Assessment & Prediction of Software reliability: ANN Approach "	IEEE Scopus Indexed Int. Nat. Conf. 2020	SMART-2020 Conference Proceeding	Scopus

Table 5.8.1. 4 : List of paper publication by faculty in Year 2019

Sr. No	Name of Faculty	Paper Title	Journal Name	Vol. No, Issue No.	Indexing
1	Dr. Gulista Khan	Comparative analysis of routing algorithms for underwater sensor network	Pervasive Computing: A Networking Perspective and Future Directions	Conference Proceeding	Scopus
2	Dr. Gulista Khan	An Improved version of Playfair Technique	IJITEE	Vol.8, Issue 9	Scopus
3	Dr. Gulista Khan	Underwater Sensors Networks: A Heuristic Approach for Void Avoidance and selection for best forwarder	IJSTR	Vol.8, Issue 8	Scopus
4	Dr. Gulista Khan	Multihop Vector Based routing for Void Avoidance in UWSN: A Linear Programming Approach	IJSTR	Vol.8, Issue 8	Scopus
5	Dr. Gulista Khan	Role of Internet of Things in Shaping Cities of Rajasthan as Smart Cities	8th International Conference System Modeling and Advancement in Research Trends (SMART)	Conference Proceeding	Scopus
6	Dr. Gulista Khan	FPRTR-Fault Persistent Real Time Routing Algorithm for Underwater Acoustic Sensor Networks	Proceedings of 3rd International Conference on Internet of Things and Connected Technologies (ICIoTCT)	Vol 14, Issue 17	SSRN
7	Dr. Gulista Khan	Energy efficient routing algorithm for void avoidance in UWSN using residual energy and depth variance	International Journal of Computer Networks & Communications (IJCNC)	Vol 10, Issue 4	Scopus
8	Dr. Gulista Khan	BEG: Bin Oriented Energy Efficient Gathering of Data in Wireless Sensor Network	international conference System Modelling and Advancement in Research Trends	Conference Proceeding	IEEE
9	Mr. Kamal Kumar Gola	Modified Version of Playfair Technique to Enhance the Security of Plaintext and Key Using Rectangular and Substitution Matrix	IJEAT	Vol.8, Issue 5	Scopus
10	Mr. Kamal Kumar Gola	An Improved Version of Playfair Technique	IJITEE	Vol.8, Issue 9	Scopus
11	Mr. Kamal Kumar Gola	Comparative analysis of routing algorithms for underwater sensor network	Pervasive Computing: A Networking Perspective and Future Directions	Conference Proceeding	Scopus
12	Dr. Vipin kumar	An optimum method for the M/D/C waiting time Distribution	International Journal of Research Trends in Computer Science & Information Technology (IJRTCSIT)	Vol. 5, Issue 2	Google Scholar
13	Ms. Sakshi Singh	Design of Hexagonal Fractal Antenna for C Band and X Band applications	Universal Review	Vol. 3, Issue12	Google Scholar
14	Dr. Pankaj Goswami	Compact Fractal UWB EBG based Patch Antenna for Noninvasive Detection of Malignant Tissues	IEEE, International Conference on System Modeling & Advancement in Research Trends, 2019	Conference Proceedings	Scopus

15	Dr. Pankaj Goswami	Transient Specifications and Reactive power compensation using ShAPF for Non-Linear load Applications	IEEE, International Conference on System Modeling & Advancement in Research Trends, 2019	Conference Proceedings	Scopus
16	Dr. Pankaj Goswami	A frequency reconfigurable circular microstrip patch antenna	IEEE, International Conference on System Modeling & Advancement in Research Trends, 2019	Conference Proceedings	Scopus
17	Dr. Garima Goswami	Compact Fractal UWB EBG based Patch Antenna for Noninvasive Detection of Malignant Tissues	IEEE, International Conference on System Modeling & Advancement in Research Trends, 2019	Conference Proceedings	Scopus
18	Dr. Garima Goswami	Transient Specifications and Reactive power compensation using ShAPF for Non-Linear load Applications	IEEE, International Conference on System Modeling & Advancement in Research Trends, 2019	Conference Proceedings	Scopus
19	Dr. Garima Goswami	A frequency reconfigurable circular microstrip patch antenna	IEEE, International Conference on System Modeling & Advancement in Research Trends, 2019	Conference Proceedings	Scopus
20	Dr Rakesh Kumar Dwivedi	High capacity steganography protected using Shamir's threshold scheme and permutation framework	Int. J. Innov. Technol. Exploring Eng.	Volume-8, Issue-9S	Scopus
21	Dr Rakesh Kumar Dwivedi	A Novel PDF Steganography Optimized Using Segmentation Technique	International Journal of Information Technology (Singapore)	Vol 12, Issue 4	Scopus
22	Dr Rakesh Kumar Dwivedi	A Design Entropy Based Hybrid Soft Classifier Algorithms for Improving Classification Performance of a Satellite Data	Journal of Mathematical Sciences and Modelling2	Vol 2 Issue 2	Scopus
23	Dr Rakesh Kumar Dwivedi	Hybrid Neuro-Fuzzy Classification Algorithm for Social Network	International Journal of Engineering and Advanced Technology (IJEAT)	Vol 8, Issue 6	Scopus
24	Dr Rakesh Kumar Dwivedi	Study of discontinuity adaptive MRF models with kernel-based noise classifier	Journal of Geomatics	Vol 13, Issue 1	Scopus
25	Dr Rakesh Kumar Dwivedi	Performance Evaluation of kernel based supervised noise clustering approach	Journal of Indian Society of Remote Sensing	Vol 47, Issue 2	Scopus
26	Dr Rakesh Kumar Dwivedi	'Assimilation of Standard Regularizer Contextual Model and Composite Kernel with Fuzzy-based Noise Classifie	Journal of Modeling and Optimization	Vol 13, Issue 1	Scopus
27	Dr Rakesh Kumar Dwivedi	Assessment of Spectral-KMOD Composite Kernel-Based Supervised Noise Clustering Approach in Handling Nonlinear Separation of Classes	Advances in Intelligent Systems and Computing	Springer, Singapore	Scopus
28	Dr Rakesh Kumar Dwivedi	A High Capacity PDF Text Steganography Technique Based on Hashing Using Quadratic Probing	", International Journal of Intelligent Engineering and Systems(2019)	Vol 12, Issue 3	Scopus
29	Dr Rakesh Kumar Dwivedi	A Novel Framework for Prioritizing Emergency Vechiles Through Queueing Theory	International Journal of Engineering and Advanced Technology (IJEAT	Vol 8, Issue 3	Scopus

30	Dr Rakesh Kumar Dwivedi	Novel Algorithm for Leader Election Process in Virtual Traffic Light Protocol'	International Journal of Information Technology	Vol 12	Scopus
31	Dr Rakesh Kumar Dwivedi	Performance Analysis of Support Vector Machines in Defective and Non Defective Mangoes Classification	International Journal of Engineering and Advanced Technology (IJEAT)	Vol 8, Issue 4	Scopus
32	Dr Ashendra Kumar Saxena	A Novel Data Hiding Tool Based On PVD: Steganopixtrans	International Journal of Scientific and Technology Research	Vol 8, Issue 12	Scopus
33	Dr Rajeev Kumar	Review of Machine Learning Algorithm on Cancer Classification for Cancer Prediction and Detection	The International journal of analytical and experimental modal analysis (IJAEMA)	Vol. 11,Issue 12	UGC
34	Dr Rajeev Kumar	Big Data in Computer Cyber Security as an Emergent Infrastructure	The International journal of analytical and experimental modal analysis (IJAEMA)	Vol. 11, Issue 12	UGC
35	Dr Rajeev Kumar	Study towards the Analytic Approach for Human Computer Interaction using Machine Learning	The International journal of analytical and experimental modal analysis (IJAEMA)	Vol. 11,Issue 12	UGC
36	Dr Rajeev Kumar	Enhancement of Big Data Privacy Preserved of Map Reduce by Using Data Anonymization Technique	The International journal of analytical and experimental modal analysis (IJAEMA)	Vol. 11,Issue 11	UGC
37	Dr Rajeev Kumar	Security Analysis and Issues in Underwater Wireless Sensor Auditory and Multipath Network	The International journal of analytical and experimental modal analysis (IJAEMA)	Vol. 11,Issue 10	UGC
38	Dr Rajeev Kumar	Evolution of New Integrated Haze Removal Algorithm Based On Haze Line	International Journal of Engineering and Advanced Technology (IJEAT)	Vol. 8,Issue 6	Scopus, WOS
39	Dr Rajeev Kumar	Intend Adaptive Algorithms for Time Critical Applications in Underwater Wireless Sensor Auditory and Multipath Network	IJSRD - International Journal for Scientific Research & Development (IJSRD)	Vol. 7,Issue 3	UGC, ICI
40	Ms Anu Sharma	Hybrid Neuro-Fuzzy Classification Algorithm for Social Network	International Journal of Engineering and Advanced Technology,	Vol. , Issue	Scopus
41	ANU SHARMA	Analyzing Performance of Various Clustering Algorithms for Social Network Dataset	ICIM, Bhatinda	Conference Proceeding	Google Scholar
42	Ms. Neeraj Kumari	Performance Analysis of Support Vector Machines in Defective and Non Defective Mangoes Classification	International Journal of Engineering and Advanced Technology		SCOPUS
43	Dr. R C Tripathi	A Review on Malacious Attack & Defense Techniques on Android Based SMART Phone Systems	International Journal of Innovative Technology and Exploring Engineering (IJITEE)	Vol. No.8, Issue No. 853	Scopus
44	Dr. R C Tripathi	Repacked android application detection using image similarity	Nexo Revista Científica (https://www.lamjol.info/index.php/NEXO/index)	-	Google Scholar
45	Dr. R C Tripathi	"Solving Knapsack Problem with Genetic Algorithm Approach "	International Conference & 22nd Annual convention of Vijnana Parishad of India, on the topic: Advances in Operations Research, Statistics and Mathematics (AOSM-2019)	CRC Press, Taylor & Francis-Erin Harris	Google Scholar

46	Dr. R C Tripathi	" Stereo Seam Coupling and Constant Space Belief Propagation for Retargeting Stereoscopic 3D Images"	Advances in Operations Research, Statistics and Mathematics (AOSM-2019),	CRC edited book which is an SCOPUS indexed Journal JNANABHA	SCOPUS
47	Dr. R C Tripathi	"A Novel 3-D Image Retargeting using Disparity Map Acquisition (DMA) Algorithm with Stereo Seam Carving"	8th IEEE sponsored International Conference on System Modeling & Advancement in Research Trends (SMART-2019)	Conference Proceeding	Google Scholar
48	Dr. R C Tripathi	"A Novel 3-D Image Retargeting using Stereo Seam Carving with Semantic Collage of Images"	IJIRT-148222, INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH IN TECHNOLOGY	IJIRT| Volume 5	Google Scholar
49	Dr. R C Tripathi	"To Propose Approach for the Detection of Malicious Nodes in VANET"	International Conference on Advances in Engineering Science Management & Technology 2019 (CAESMT19)	ELSEVIER International Journal	Google Scholar
50	Dr. R C Tripathi	"A Review Towards the Approach for the Detection of Malicious Nodes in Mobile Adhoc Network"	2nd International Conference Proceedings on Advanced Computing And Software Engineering "ICACSE-2019"	Volume No.I	Google Scholar
51	Dr. R C Tripathi	"A Review Towards the Sentiment Analysis Techniques for the Analysis of Twitter Data"	2nd International Conference Proceedings on Advanced Computing And Software Engineering "ICACSE-2019"	Volume No.I	Google Scholar
52	Ms. Neha Anand	Half Girlfriend: Depiction of Madhav Jha's Struggle in Acquisition of English Language	International Journal of Higher Education and Research	-	UGC
53	Ms. Neha Anand	Significance of ' For Whom The Bell Tolls'	Literary Endeavour (International Journal)	-	UGC
54	Dr Ashendra Kumar Saxena	A High Capacity PDF Text Steganography Technique Based on Hashing Using Quadratic Probing	Int. J. Intell. Eng. Syst	Vol.12, No.3	Scopus
55	Aaditya Jain	A Construction of Security Enhanced and Efficient Handover AKA Protocol in 5G Communication Network	10th Int. Conf. on Computing, Communication and Networking Technologies (10ICCCNT) (IIT) Kanpur	Conference Proceedings	Scopus
56	Aaditya Jain	Exposing the Security Weaknesses of Fifth Generation Handover Communication	10th Int. Conf. on Computing, Communication and Networking Technologies (10ICCCNT) (IIT) Kanpur	Conference Proceedings	Scopus
57	Aaditya Jain	Sentiment Analysis of Keenly Intellective Smart Phone Product Review Utilizing SVM Classification Technique	10th Int. Conf. on Computing, Communication and Networking Technologies (10ICCCNT) (IIT) Kanpur	Conference Proceedings	Scopus
58	Aaditya Jain	Comprehensive Study on Methods that Helps to Increase the Life of the WSNs	Int. Conf. on Inventive Computation Technologies(ICICT) RVS Technical Campus, Coimbatore	Conference Proceedings	Scopus
59	Aaditya Jain	A Novel Approach for Cluster Head Selection By Applying Fuzzy Logic in Wireless Sensor Networks (WSNs) with Maintaining Connectivity	Int. Conf. on Inventive Computation Technologies(ICICT) RVS Technical Campus, Coimbatore	Conference Proceedings	Scopus
60	Namit Gupta	Artificial Intelligence in Home Automation	ICAC-2019	Conference Proceedings	Google Scholar

61	Namit Gupta	Biometric System and its trends for today's era for Uniquely Identifying, Authentication and authoroziation	ICAC-2019	Conference Proceedings	Google Scholar
62	Namit Gupta	Comparative Design and Analysis of 2D and 3D Type Torus NOC Architecture	ICAC-2019	Conference Proceedings	Google Scholar
63	Dr. Arpit Jain	,"AnInternalSchematicViewandSimulationofMajorDiagonalMeshNetwork-on-Chip	Journal of Computational and Theoretical Nanoscience	Vol. 16	SCOPUS, UGCCARE
64	Dr. Arpit Jain	Synthesisof2Dand3DNoCMeshRouterArchitectureinHDLEnvironment",	Journal of Advanced Research in Dynamical & Control Systems	Vol.11	SCOPUS, UGCCARE
65	Dr. Arpit Jain	Simulation of NetworkonChipfor3D 4RouterArchitecture	International Journal of Recent Technology and Engineering (IJRTE)	Volume-8	SCOPUS
66	Dr. Rupal Gupta	Addiction Due To Inventions Of IT (https://www.researchgate.net/publication/338866813_Addiction_Due_To_Inventions_Of_IT?_sg=5HKBnDJZSrLI3fWXOdITZNb70fiRlF9wAsOcI2CryaknlVaRk2CDA43ezzR4pp6frK-zxSy-xHMreC_ReJbpxUY4DZCYwiCZTZSCs3Oq.6NUS_oMOWbxSehCfPRqYeGsEj_Qzt2_IRQMUO3A5IDAbd7qkLPAe501i6250hxh-XM97IvWk89VYR3WU_TyVfA)	ICAC-2019	Conference Proceedings	Google Scholar
67	Dr. Shakti Kundu	Print Production Workflow Systems: An Algorithmic Implementation	International Journal of Advanced Science and Technology **(IJAST)**	Vol. 131	Scopus
68	Dr. Shakti Kundu	Moth-Dolphin Optimization Algorithm: A Nature Inspired Technique	International Journal of Innovative Technology and Exploring Engineering **(IJITEE)**	Vol. 8, Issue 12	Scopus
69	Dr. Shakti Kundu	S-TVDS: Smart Traffic Violation Detection System for Indian Traffic Scenario	International Journal of Innovative Technology and Exploring Engineering **(IJITEE)**	Vol. 8, Issue 43	Scopus
70	Shakti Kundu	Enrichment of Performance of Operation based Routing Protocols of WSN using Data Compression	Proceedings of 8th International Conference on System Modelling & Advancement on Research Trends (SMART)	Conference Proceeding	Scopus
71	Dr. R C Tripathi	"A Malicious Attacks and Defense Techniques on Android-Based Smartphone Platform"	International Journal of Innovative Technology and Exploring Engineering (IJITEE) Elsevier ISSN: 2278-3075	Volume-8 Issue-8S3,	ELSEVIER
72	Dr. ASHENDRA KUMAR SAXENA	High Capacity Steganography Protected using Shamirs Threshold Scheme And Permutation Framework	International Journal of Innovative Technology and Exploring Engineering	Vol 8, Issue 9	Scopus
73	Dr. ASHENDRA KUMAR SAXENA	A Framework For Implementing Blockchain With Enhanced E2E Encryption on Ethereum 2.0	International Journal of Advanced Science and Technology	Vol.28, Issue 20	Scopus
74	Dr. ASHENDRA KUMAR SAXENA	Review Paper On Self-Driving Cars Implementation Techniques And Its Challenges	Think India Journal	Vol.5, Issue 8	UGC CARE

Table 5.8.1.5 : List of paper publication by faculty in Year 2018

Sr. No	Name of Faculty	Paper Title	Journal Name	Vol. No, Issue No.	Indexing
1	Prof. R.K.Dwivedi	Study of SigmoidSpectral Composite Kernel based noise classifier with entropy in handling non linear separation of classes	UPCON-2018MMMUT	IEEE Conference Proceedings	Scopus

2	Prof. R.K.Dwivedi	Assessment of Spectral-KMOD Composite Kernel based supervised noise clustering approach in handling non linear separation of classes	RACCCS-2018 Aryabhatta College of Engineering & Research Center , Ajmer	Conference Proceedings	Scopus
3	Prof. R.K.Dwivedi	Load balancing in Underwater Wireless sensor network using Clustering approach	Applications of Graph & Network in Computational Studies, Bioinformatics & Engineering and their Technical Terminology, organized by JNU Delhi	Conference Proceedings	Scopus
4	Prof. R.K.Dwivedi	FPRTR- Fault Persistent Real Time routing algorithm for Underwater Acoustic Sensor Networks	International Conference on Internet of Things and Connected Technologies (ICIotCT 2018), organized by Amity University, Jaipur	Conference Proceedings	Elsevier SSRN
5	Prof. R.K.Dwivedi	A Comparative study on Social Media Networks, to Give a Better Medium to Connect with The Mass	International Conference on Advanced Computing (ICAC2018), organized by CCSIT, Teerthanker Mahaveer University Moradabad	Conference Proceedings	Google Scholar
6	Prof. R.K.Dwivedi	A study on handling non linear separation of classes using kernel based supervised noise clustering approach	International Journal of Computer Applications	Vol 181, Issue 5	Google Scholar
7	Prof. R.K.Dwivedi	Energy Efficient Routing Algorithm for Void Avoidance for UWSN Using Residual Energy and Depth Variance	", International Journal of Computer Networks & Communications (IJCNC)	Volume 14; Issue 4	Scopus
8	Prof. R.K.Dwivedi	Autonomous Deployment and Adjustment of Nodes in UWSN to achieve Blanket Coverage (ADAN-BC)	International Journal of Information Technology	-	Scopus
9	Prof. R.K.Dwivedi	Methodology for the Perseverance to Node Mobility Issues in Underwater Sensor Network (UWSN)	International Journal on Future Revolution in Computer Science & Communication Engineering (IJFRSCE)	Volume 4; Issue 2	UGC
10	Prof. R.K.Dwivedi	CDA-Clone Detection Algorithms in Wireless Sensor Networks	International Journal of Computer Science and Information Security	Volume 14; Issue 7	WOS, Thomson Reuters
11	Prof. R.K.Dwivedi	LRCLE- Location finding algorithm to Reduce Communication cost and Localization Error for acoustic Sensor Nodes in UWSN	InternationalJournal on InformationTechnologies and Security	Volume 10; Issue 4	WOS
12	Prof. R.K.Dwivedi	Uncertainty Reduction of a Satellite Imagery Using Fuzzy Based Soft Classifier Tool	Egyptian Journal of Remote Sensing and Space Sciences (EJRS		SCI
13	Prof. R.K.Dwivedi	Physical Parameters Extraction of Fruit Mango Using Image Processing In MATLAB	International Journal of Engineering Research and Applications	Volume 8; Issue5-	Google Scholar
14	ANU SHARMA	Analyzing and Clustering for Social Network Data using Self-Organizing Maps	International Journal of Current Advanced Research	Volume 7; Issue 7	UGC Approved(2018)

15	ANU SHARMA	Survey of Data Mining Techniques for Social Media Analysis by Using Clustering Algorithms	International Conference of Advanced Computing(ICAC-2018)on May 05th, 2018 organized by CCSIT	Conference Proceeding	Google Scholar
16	ANU SHARMA	Analyzing facebook dataset using self organizing map	System Modeling and Advancement in Research Trends(SMART) 7th International Conference on 23-24th Nov,2018 organized by CCSIT, TMU	Conference Proceeding	Scopus
17	Dr. Ashok Kumar	"Multiple Classifier System for Writer Independent Offline Handwritten Signature Verification using Hybrid Features	International Journal of Computer Information System and Industrial Management Applications	Volume 10	Scopus
18	Dr. Ashok Kumar	Multiple Classifier System for Writer Independent Offline Signature Verification using Genetic Algorithm and SVM	International Journal of Tomography and Simulation	Volume 31, Issue 4	Scopus
19	Dr. Ashok Kumar	Multiple Classifier System for Writer Independent Offline Handwritten Signature Verification using Elliptical Curve Paths for Feature Extraction	International Journal of Applied Engineering Research	Volume 13, Number 12	Google Scholar, ICI
20	Dr. Ashok Kumar	Development of Writer Independent Offline Signature Verification System through Multiple Classifier and Geometric Features"	International Conference on System Modelling & Advancement on Research Trends	IEEE Conference Proceeding	Scopus
21	Aaditya Jain	Stream and Online Clustering for Text Documents	Int. Conf. on Advanced Computing Networking and Informatics (ICANI) Medi-Caps University, Indore	Springer Conference Proceeding	Scopus
22	Aaditya Jain	Clustering of Text Streams via Facility Location and Spherical K-means	Int. Conf. on Electronics, Communication and Aerospace Technology (ICECA) RVS Technical Campus, Coimbatore	IEEE Conference Proceeding	Scopus
23	Aaditya Jain	Generalized Method to Produce Balanced Structures Through k-means Objective Function	2nd Int. Conf. on I-SMAC(IoT in Social, Mobile, Analytics and Cloud) SCAD Institute of Tech. at Palladam, Tirupur	IEEE Conference Proceeding	Scopus
24	Aaditya Jain	Application of Stream Cipher and Hash Function in Network Security	Int. Conf. on Computer Networks, Big Data and IoT (ICCBI) Vaigai College of Engg., Madurai	Springer Conference Proceeding	Scopus

25	Aaditya Jain	Session Layer Security Enhancement Using Customized Protocol and Strong	Int. Conf. on Computer Networks, Big Data and IoT (ICCBI) Vaigai College of Engg., Madurai	Springer Conference Proceeding	Scopus
26	Aaditya Jain	Cryptographic Mechanism	Int. Conf. on Computer Networks, Big Data and IoT (ICCBI) Vaigai College of Engg., Madurai	Springer Conference Proceeding	Scopus
27	Namit Gupta	Ethical Hacking Techniques with Penetration Techniques	ICAC-2018	Conference Proceeding	Google Scholar
28	Dr. Arpit Jain	Fat Tree NoC Design and Synthesis	Intelligent Communication, Control and Devices,	Conference Proceeding	Springer, Singapore
29	Ms. Neeraj Kumari	Physical Parameters Extraction of Fruit Mango Using Image Processing In MATLAB	**IJERA**		Google Scholar
30	Ms. Neeraj Kumari	Accuracy Testing of Data Classification uses TensorFlow a Python Framework in ANN Designing	SMART, 2018.	Conference Proceeding	Scopus
31	Ms. Neeraj Kumari	Quality-of-Service Routing Protocol for Wireless Sensor Networks	IEEE	IEEE Conference Proceeding	Scopus
32	Rupal Gupta	Generating Patterns from Pizza Ontology using Protégé and Weka Tool	SMART-2018	Conference Proceeding	SCOPUS
33	Rupal Gupta	A Model for Mapping Semantic Web Data with Heterogeneous Data Sources Using SPARQL (https://www.researchgate.net/publication/326555890_A_Model_for_Mapping_Semantic_Web_Data_with_Heterogeneous_Data_Sources_Using_SPARQL?_sg=3rmaBF90wv0CwWxCOowcu9PaXzMzsnwqYdCyYQHPmSiWzq42FZdJYeemJyMIlfbwZ-m9B-rB5JsX3MjZQ3KaAmuziwNxOWwSLAaynUHB.km2AdYb2cSGtpuQiiOBdNmTrLEGZCNfstfj2gYaX091sw-QXHnGn_AHpZ8obPjSNZ8-8ZFYKkUG5NDmLMpqAng)	IJCSE (International Journal of Computer Sciences and Engineering)	Vol.-6	UGC
34	Dr.Shakti Kundu	An Improved Algorithmic Implementation of Rail Fence Cipher	International Journal of Future Generation Communication and Networking **(IJFGCN)**	11(2)	Scopus
35	Dr. ASHENDRA KUMAR SAXENA	Managing Energy Efficiency and Controlling Congestion Using CSMAC for Wireless Sensory Network	International Journal of Research in Advent Technology	Vol. 6 , Issue 9	UGC CARE
36	Dr. ASHENDRA KUMAR SAXENA	Controlling Congestion by using Cluster Routing as a Gateway in WSN	International Journal of Computer Sciences and Engineering	Vol. 6 , Issue 12	UGC CARE
37	Dr. ASHENDRA KUMAR SAXENA	Modeling and Evaluation of Heterogeneous Networks for VANETs	SMART, 2018.	IEEE Conference Proceeding	Scopus

38	Dr. Rajeev Kumar	A Comprehensive Study of Lip Controlled Human Computer Interface using Machine Learning	International Journal of Engineering Research and Applications (IJERA)	Vol. 8 , Issue 1	UGC
39	Dr. RC Tripathi	"Internet-of-things based study of Indian smart cities architecture, standards, security and opportunities (2010-2020)"	National Conference on Modeling Optimization and Computing for Engineering Problems (MOCEP-2018)	Conference Proceeding	Google Scholar
40	Dr. RC Tripathi	"A review of vanets evolution, challenges and its applications"	National Conference on Modeling Optimization and Computing for Engineering Problems (MOCEP-2018) Use of Technical Hindi Terminology"	Conference Proceeding	Google Scholar
41	Dr. RC Tripathi	Software Reliability Modeling and Metrics"	National Conference on Modeling Optimization and Computing for Engineering Problems (MOCEP-2018) Use of Technical Hindi Terminology"	Conference Proceeding	Google Scholar
42	Dr. RC Tripathi	"Optimization of Cost of Software Reliability Development Model by using Genetic Algorithms"	National Conference on Modeling Optimization and Computing for Engineering Problems (MOCEP-2018) Use of Technical Hindi Terminology"	Conference Proceeding	Google Scholar
43	Dr. RC Tripathi	"Pleasantness of Faculty Members: An Emotional Perception in Artificial Intelligence"	International Journal of Advance Studies & Engineering" (IRJAES)	Vol. 4, Issue 1	Google Scholar
44	Dr. RC Tripathi	"A Study of Artificial Emotional Intelligence Issues among the Faculty Members"	International Journal of Advance Studies & Engineering" (IRJAES)	Vol. 4, Issue 1	Google Scholar

45	Dr. RC Tripathi	*"Genetic Algorithms: Concepts, Applications in Software Engineering and Test Data Generation using GA and Hamming Distance Approach"*	*International Conference on "Sustainable Computing and Advanced Artificial IntelligenceTechniques (ICSCAAIT-2018)"*	*conference proceeding and UGC approved open access Journal*	Google Scholar
46	Gulista Khan	Load balancing in Underwater Wireless sensor network using Clustering approach	Applications of Graph & Network in Computational Studies, Bioinformatics & Engineering and their Technical Terminology, organized by JNU Delhi	Conference Proceedings	Scopus
47	Gulista Khan	FPRTR- Fault Persistent Real Time routing algorithm for Underwater Acoustic Sensor Networks	International Conference on Internet of Things and Connected Technologies (ICIotCT 2018), organized by Amity University, Jaipur	Conference Proceedings	Elsevier SSRN
49	Gulista Khan	Energy Efficient Routing Algorithm for Void Avoidance for UWSN Using Residual Energy and Depth Variance	", International Journal of Computer Networks & Communications (IJCNC)	Volume 14; Issue 4	Scopus
50	Gulista Khan	Autonomous Deployment and Adjustment of Nodes in UWSN to achieve Blanket Coverage (ADAN-BC)	International Journal of Information Technology	-	Scopus
51	Gulista Khan	Methodology for the Perseverance to Node Mobility Issues in Underwater Sensor Network (UWSN)	International Journal on Future Revolution in Computer Science & Communication Engineering (IJFRSCE)	Volume 4; Issue 2	UGC
52	Gulista Khan	CDA-Clone Detection Algorithms in Wireless Sensor Networks	International Journal of Computer Science and Information Security	Volume 14; Issue 7	WOS, Thomson Reuters
53	Gulista Khan	LRCLE- Location finding algorithm to Reduce Communication cost and Localization Error for acoustic Sensor Nodes in UWSN	International Journal on IinformationTtechnologies and Ssecurity	Volume 10; Issue 4	WOS

Table 5.8.1. 6 : List of Book Publications

S.No.	Title Of The Book	Name Of The Author	Publication	ISBN No.	Year of Publication
1	Digital Marketing Trends and Prospects	Dr. Shakti Kundu	BPB Publications India	978-93-8989-858-3	2021

2	Software Engineering: A Systematic Approach	Dr. Shakti Kundu, Tushar Mehrotra, Aman Kumar, Gaurav Kumar Rajput, Narender Singh	Lulu Publication, 3101 Hillsborough St, Raleigh, NC 27607, United States	978-1-71603-172-4	2020
3	Introduction to Computers With Basics of Programming	Dr. Rajeev Kumar	Lambert Academic Publishing	ISBN: 978-620-2-51992-2	2020

Table 5.8.1.7 : List of Book Chapter Published

Sr. No.	Name	Title	Book Name	Publication	Vol. No	Issue No.	Year	ISSN/ISBN No
1	Ms. Neeraj Kumari	Artificial Intelligence and Indian Agriculture	Advanced Computing & its Applications	TMU	1	1	2020	978-93-5416-125-5
2	Mr. Namit Gupta	1. Artificial Intelligence and Human Intelligence 2. Artificial Intelligence and Data Science Technologies for Management of Post-COVID scenario – A Survey 3. Impact of COVID-19 on Artificial Intelligence in Cyber security Market-A Survey	Advanced Computing & its Applications	TMU	1	1	2020	978-93-5416-125-6
3	Ms. Anu Sharma/Dr. R.K Dwivedi	Social Media Analytics using Data Mining	Advanced Computing & its Applications	TMU	1	1	2020	978-93-5416-125-8
4	Ms. Ranjana Sharma/Dr. R.K Dwivedi	The study Accuracy technique for Satellite Imagery	Advanced Computing & its Applications	TMU	1	1	2020	978-93-5416-125-10
5	Dr. R.C Tripathi	"Computer Application in Management" BCOS-183, Unit-6; IT Security Management in Business, Block-2	MBA students of School of Management Studies, IGNOU, New Delhi 110068	School of Management Studies (SOMS), IGNOU New Delhi	1	1	2020	ISBN: 978-81-256-6031-
6	Dr. R.C Tripathi	UNIT 2 DYNAMIC MODELING	MCA students of IGNOU New Delhi	SOCIS, IGNOU Delhi	1	1	2021	In process
7	Dr. R.C Tripathi	UNIT 1 OBJECT MODELING	MCA students of IGNOU New Delhi	SOCIS, IGNOU Delhi	1	1	2021	In process

	Prof. Rakesh K. Dwivedi	'Novel Algorithm for leader election process in virtual traffic light protocol'	'IoT and Cloud Computing Advancements in Vehicular Adhoc Networks'	IGI Global publishers.	1	1	2020	978179982508
9	Prof. Rakesh K. Dwivedi	'Open Threads-Enabled Mesh Networks in Vehicles for RealTime Traffic Monitoring'	'IoT and Cloud Computing Advancements in Vehicular Adhoc Networks'	IGI Global publishers.	1	1	2020	9781799825708
10	Mr. Kamal Kr. Gola	A noval Approach of product cipher algorithm using circular queues	Smart COMM 2020	CRC Press (T & F series)	1	1	2021	
11	Mr. Kamal Kr. Gola	An impact of machine learning on processing big data on high processing computing	Smart COMM 2020	CRC Press (T & F series)	1	1	2021	
12	Aaditya Jain	Application of Stream Cipher and Hash Function in Network Security	Lecture Notes on Data Engineering and Communications Technologies	Springer Nature Switzerland AG	Vol. 31	1	2019	10.1007/978-3-030-24643-3_51
13	Aaditya Jain	Session Layer Security Enhancement Using Customized Protocol and Strong Cryptographic Mechanism	Lecture Notes on Data Engineering and Communications Technologies	Springer Nature Switzerland AG	Vol. 31	1	2019	10.1007/978-3-030-24643-3_76
14	Aaditya Jain	Simulation of VANET Using Pointer Base Replacement Mechanism	Lecture Notes on Data Engineering and Communications Technologies	Springer Nature Switzerland AG	Vol. 31	1	2019	10.1007/978-3-030-24643-3_77
15	Aaditya Jain	Comprehensive Study on Methods that Helps to Increase the Life of the WSNs	Lecture Notes in Networks and Systems	Springer Cham	Vol 98	1	2019	10.1007/978-3-030-33846-6_51
16	Aaditya Jain	A Novel Approach for Cluster Head Selection By Applying Fuzzy Logic in Wireless Sensor Networks (WSNs) with Maintaining Connectivity	Lecture Notes in Networks and Systems	Springer Cham	Vol 98	1	2019	10.1007/978-3-030-33846-6_43
17	Aaditya Jain	Stream and Online Clustering for Text Documents	Advances in Intelligent Systems and Computing	Springer Nature Singapore Pte Ltd	AISC Vol. 870	1	2018	10.1007/978-981-13-2673-8_49

Table 5.8.1.9 : List of Patents Published

Sr. No.	Name of the Inventors	Title of the Patent	Application No.	Published / Filed
1	Prof. Rakesh Kr. Dwivedi ; Dr. Ashendra Kr. Saxena ; Dr. Arpit Jain ; Dr. Ashok Kumar ; Rajendra Prasad Pandey ;	SMART COMFORT BASED CLOTHING	202111012601	Published 2021
2	Prof. Rakesh Kr. Dwivedi ;Dr. Ashendra Kr. Saxena ; Dr. Arpit Jain ; Dr Shakti Kundu ; Gaurav Rajput ; Pradeep Kumar Shah	ANTI-DROWNING LIFESAVING SYSTEM	202111012609	Published 2021
3	Prof. Rakesh Kr. Dwivedi ; Dr. Ashendra Kr. Saxena ; Dr. Arpit Jain ; Gaurav Rajput ; Pradeep Kumar Gupta ; TusharMehrotra	AUTOMATED CLOTH CLEANING AND DRYING DEVICE	202111012617	Published 2021
4	Prof. Rakesh Kr. Dwivedi ; Dr. Ashendra Kr. Saxena ; Dr. Arpit Jain ; Dr. KirtiShukla ; Dr. R.C.Tripathi ; Namit Gupta ; NeerajKumari	STAIN-FREE AND HYGEINIC BEVERAGE CONSUMING DEVICE	202111012614	Published 2021
5	Prof. Rakesh Kr. Dwivedi ; HinaHashmi ; NeerajKumari ; Rajendra Prasad Pandey ; Ranjana Sharma ; VineetSaxena	MULTIFUNCTIONAL SUN BATHING DEVICE	202111012611	Published 2021
6	Prof. Rakesh Kr. Dwivedi ; Abhilash Kumar ; Dr Shakti Kundu ; HinaHashmi ; JyotiRanjanLabh ; NeerajKumari	AQUATIC LIFE SAVING DEVICE	202111012621	Published 2021
7	Prof. Rakesh Kr. Dwivedi ; Dr. Ashendra Kr. Saxena ; Aaditya Jain ; Dr. ShambhuBhardwaj ; Dr. Rajeev Kumar ; Harjinder Singh	AUTOMATED AMPOULE OPENING DEVICE	202111012624	Published 2021
8	Prof. Rakesh Kr. Dwivedi; Dr. Ashendra Kr. Saxena; Dr. Arpit Jain ; Pradeep Kumar Gupta ; Rupal Gupta; TusharMehrotra	MAGLEV BASED SITTING DEVICE	202111012627	Published 2021
9	Prof. Rakesh Kr. Dwivedi ; Dr. Arpit Jain ; Dr. R.C.Tripathi ; NeerajKumari ; Pradeep Kumar Shah ; Ranjana Sharma	MULTILEVEL SECURITY DEVICE FOR LUGGAGE BAGS	202111012604 A	Published 2021
10	Dr. Ashendra Kr. Saxena ; Dr. Ashok Kumar	AUTOMATED SIGN BASED ALERTING DEVICE	202111012620	Published 2021
11	Dr. Ashendra Kr. Saxena ; Aaditya Jain ; Aman Kumar ; Dr. Ashok Kumar ; Dr. KirtiShukla ; Ranjana Sharma	ORNAMENT STORAGE AND RECOMMENDATION SYSTEM	202111012608	Published 2021
12	Dr. Ashendra Kr. Saxena	AUTOMATED PET HEALTH AND HYGIENE MANAGEMENT SYSTEM	2021110007866	Published 2021
13	Dr. Arpit Jain	MULTIFUNCTIONAL DENTAL CARE DEVICE	2021110007876	Published 2021
14	Dr. Arpit Jain ; Harjinder Singh ; JyotiRanjanLabh ; Pradeep Kumar Gupta ; Ratnesh Kumar Shukla ; TusharMehrotra	INDOOR GAMING DEVICE	202111012613	Published 2021
15	Dr. Arpit Jain ; Aman Kumar ; AmitShukla ; AnkurChaudhary ; Dr. Ashok Kumar ; JyotiRanjanLabh	SMART PODIUM	202111012626	Published 2021

16	Dr. Arpit Jain ; Aaditya Jain ; Dr. R.C.Tripathi ; Namit Gupta; Pradeep Kumar Shah; PriyankSinghal	SMART FOOD DISPENSING SYSTEM	202111012629	Published 2021
17	Dr. Rajeev Kumar ; Anurag Gupta; Alok Singh Sengar;Dr. Vinay Mishra ;Vivek Kumar	TWO FACTOR AUTHENTICATION BASED SHOPPING METHOD	202111014605 A	Published 2021
18	Namit Gupta; Pradeep Kumar Shah ; Ratnesh Kumar Shukla ; RohailaNaaz ; VineetSaxena ; Vivek Kumar	ADAPTABLE SITTING DEVICE	202111012616	Published 2021
19	Pradeep Kumar Gupta ; Ratnesh Kumar Shukla; VikasVerma; Alok Singh Sengar; PriyankSinghal; Manish Joshi ; Amit Kumar; Anubhav Gupta	Indoor Solar Stove	202111018700	Published 2021
20	Prof. Rakesh Kr. Dwivedi; Lokesh R Sahana; Anu Sharma; Arun Jain; AnshuParashar; AnishSoni ; Sukhdev Singh; ShivaniPandey; Rupesh Kumar Jindal; AmitGarg	Intelligent Pen Drive: Highest Data Security (Auto Data store your gmail and link share your mobile no.) using AI-Based Programming	2021100771	Published 2021
21	Anu Sharma; JeevanKiranDandangi; JyothiMandala;CHRayalaVinodKumar;VBalaji Chandrasekhar; S. Selvakumar;Najid Ahmad; Sandeep Kumar Gupta; S.B. Chordiya;Beg Raj	DAMA- Dataset Discovery:Dataset Discovery in Data Analytics and Machine Learning Algorithm	2020103522	Published 2021
22	Dr. Ashendra Kr. Saxena ;Ajay RastogiRaghuraj Singh; Parma Nand; Prashant Kumar Mishra; VibhashYadav;Pawan Kumar Pal;CharuAwasthi; Danish Ather; Ambuj Kumar Agarwal	INHA- Combined Health Monitoring: Intelligent IoT-Based Combined Health Monitoring, Notification, Alert, Home Automation System	2020103214	Published 2020
23	Dr. Rajeev Kumar; Prof. Ramesh Chandra Panda; Dr. R. Subhashini; Dr. SouvikGanguli;Dr. ShikhaGupta;Dr. Lakshmi D; Dr. P. Sudhakaran; Dr. Piyush Gupta; Dr.ManojGupta;Dr. Parul Gupta; TanmayeeMandala;Dr. A. NirmalaJyothsna; Dr. K. SreeLatha; Dr. P. Karthigeyan	A Novel Smart Electro Mechanical Standing Ventilator For Intensive Care Unit	202031045420	Published 2020
24	Dr. Arpit Jain, Dr. Rajeev Kumar, Namit Gupta; Kunwar Sing; Anil Kumar Pandey;Nripendra Narayan Das; Sandeep Kumar; Dinesh Kumar Saini;Biplab Kumar Sarkar; S.B.Chordiya	Power Theft Detection : Power Theft Detection And Notification Using Wireless Network	2020102880	Published 2020
25	Dr. Rakesh Kr. Dwivedi,Dr. Arpit Jain, Aman Kumar ; AnandPrakashShukla; HitendraGarg; AnkurBhardwaj; Pramod Kumar; Sanjay Singh; Satyendra Singh; RohitAgarwal	SEF: Smart Educational Framework: Smart AI-IOT Based Educator Monitoring And Content Availability Alert System	2020102616	Published 2020
26	Dr. ArpitJain,Dr. Ashok Kumar,AnkurChaudhary, JyotiRanjanLabh ; Sandeep Kumar; Rohit Raja; Shilpa Rani; Sanjay Sharma; Alok Kumar Singh ; Padma Bonde; DrS.B.Chordiya	SBDA- Secured Bra For Women Safety: Smart And Secured Bra For Women Safety Based On Deep Learning Algorithm	2020102636	Published 2020

27	Dr. Rakesh Kr. Dwivedi ; ParulArora; Dr. Umang	System For Prioritizing Emergency Vehicles In Traffic Using Queuing Theory	202011044606	Published 2020
28	Dr. Rakesh Kr. Dwivedi,Dr. ArpitJain ; Karan Singh; Bharat BhushanSagar; Satvik Vats; Latha Banda; ManishaManjul; Tayyab Khan; Biplab Kumar Sarkar	IMT-Voice Based Mobile Banking : Intelligent Money Transfer Using Voice Based Mobile Banking	2020102380	Published 2020
29	Dr. Ashendra Kr. Saxena ;MD. Iqbal; Rupesh Kumar Jindal; SantoshDilipkumarParakh; ER. Rakesh Kumar; Chukka Santhaiah; S.B. Chrdiya; RambabauVatti	AMD Data Analysis: Academy Data Analysis Using Machine Learning,Deep Learning Programming	2020102379	Published 2020
30	Dr. Arpit Jain ; AshishDudhale; PrachiLabde; ArchanaShirbhate;Sandeep Kumar Gupta; S.B.Chordiya	MT-Family Member Activities and Location : Family Member Activities And Location Management Technology	2020102378	Published 2020
31	Dr. Rajeev Kumar ; Prof. Ramesh Chandra Panda;Dr. Parul Gupta; Dr. Mayank Kumar Goyal; Dr. RamachandraRK;Dr. RajdeepChakraborty; Dr. Bijendra Kumar; Dr. Mahesh Chand; Dr. Ajay Suryavanshi; Dr. Amrita; Dr. K Ram chandra; Dr. MandeepKaur; Dr. PayalKhuranaBatra; SupriyaKhaitanSakshiAgarwal; Dr. P Karthigeyan	A Novel IOT Based Disinfectant Sanitizer Tunnel Against Covid-19 Using Human Detecting Sensors And End To END Security Model	202031041923	Published 2020
32	Dr. Arpit Jain ; AnandPandey;SanjayPratap Singh; LalitVerma; Mahesh Avadhutrao; Vishakha A. Metre; S.B.Chordiya;Yashpal Singh	IAVP-Intelligent Business Data: Intelligent Business Data Visualization Using AI-Based Programming	2020102280	Published 2020
33	Dr. Rakesh Kr. Dwivedi; ParulArora;Dr. Umang	System and Method For Vehicular Traffic Control/ Management	202011029816	Published 2020
34	Dr. Shakti Kundu ; Dr. Manish Saraswat; Dr. VivekMehrotra; Dr. Shiva Durga; CH. RayalaVinod Kumar; Dr. Jyothi Mandala	SOCIAL MEDIA SENTIMENTS CALCULUS:Profile Based Mapping Social Media Sentiments Calculus Using Cloud Computing,Deep Learning Programming	202011031626	Published 2020
35	Dr. Shakti Kundu ; Dr. Puja Shrivastava; Prof. (Dr.)Rakesh Kumar; Dr. Sangeetha G; Dr. MANOJ Kumar Pandey; SachinSudamShinde	ACS SYSTEM: Advanced Customer Service System Using Machine Learning And Artificial Intelligence	202011029594	Published 2020
36	Dr. Arpit Jain ; Dr. Karan Singh;Dr. ManishaManjul; Tayyab Khan; VinayPathak	Smart -Transit: Smart Traffic Monitoring System Using IOT And AI Techniques	202011019175	Published 2020
37	Dr. Rakesh Kr. Dwivedi ; ParulArora;Dr. Umang	A PREDICTIVE ACCIDENT PREVENTION SYSTEM FOR VEHICLE SAFETY ON SHARP TURNS OF HILLY ROAD	202011033274	Published 2020

38	Dr. Rakesh Kr. Dwivedi ; ParulArora;Dr. Umang	AN INTERNET OF THINGS BASED SMART HI-TECH BUILDING SYSTEM FOR COVID PROTECTION	202011029521	Published 2020
39	Dr. Rajeev Kumar ; Dr. Naveen Tewari ; Dr. Mukesh Joshi; Dr. GopalDatt; Dr. Sandeep Kumar Budhani	System And Method For Predicting An Infectios Disease Transmitted By A Virulent Respiratory Virus	202011021969	Published 2020
40	TusharMehrotra ; Dr. Asis Kumar Tripathy; Dr. Umakanta Nanda; Dr. Alekha Kumar Mishra; Dr. Ashok Kumar Pradhan; Dr. SandeepSaxena; Dr. Shubham Gupta; Dr. Jayendra Kumar	An IOT Based Intelligent Food Storage System	202041018273	Published 2020
41	Dr. Ashok Kumar,JyotiRanjanLabh; Dr. Nripendra Narayan Das; SantoshGopalNagpure; Dr. Rajinder Singh; Dr. Poorna Shankar	Can-Device: Automatic Count The Number Of Car Running On Road(Real Time ,Location,Running Speed Etc.)Using Machine Learning	202011018852	Published 2020
42	Dr. Rakesh Kr. Dwivedi ; ParulArora;Dr. Umang	A SMART ADAPTIVE NEURAL FUZZY INTERFACE SUPERVISED ACTIVE POWER FILTER FOR HARMONIC DISTORTION CONTROL IN AC POWER DRIVEN IOT DEVICES	202011009012	Published 2020
43	Dr. Rakesh Kr. Dwivedi ; Dr. Pankaj Kumar Goswami; Dr. GarimaGoswami	A Fractal Trident Shape Large Band Antenna For Multiple Frequency Based Internets Of Things Applications	201911054606	Published 2020
44	Dr. Arpit Jain ; Dr. Varinder Singh;TarunSinghal;Dr. V. Lokeswara Reddy; Dr. Sanjeev Kumar Sharma; Dr. VikasGoel; Dr. Amit Kumar Gupta; Dr. Sachin Kumar	Exceeded The ATM Network: Account Holder Has Exceeded The ATM Network Limit	201911050943	Published 2020
45	Dr. Arpit Jain; Dr. Sanjeev Kumar Sharma; Dr. NareshTrivedi; Dr. R. MadanaMohana; Dr. M. NagabhushanaRao; Prof. SantoshGopalNagpure; Dr. B. Venkatesh	W-SIM: Water Sim (Per Member Water Use Control And Management System)	201911041744	Published 2019
46	Dr. Arpit Jain ; Dr. Sanjeev Kumar Sharma;Prof. SantoshGopalNagpure; Dr. B. Venkatesh; Dr. ManjuKhari; Dr. S.Vimal; A.Arulprakash; Dr. R.Viswanathan	VM-System:IOT Based Vehicle Monitoring System Using Beagle Bone Kit	201911040479	Published 2019
47	Dr. Arpit Jain; Dr. Suresh Kumar; Dr. Varinder Singh; Jay ChandrashekharAjmire; Yash MADHUKAR Patil; ParthRavindraPatil	RT-Sanitizer: Resizeable Toilet Seat With Rolling Sanitizer	201911038954	Published 2019
48	Dr. Arpit Jain ; Dr. S.V.S. RamakrishnamRaju; DR. NareshTrivedi; Prof. SantoshGopalNagpure; Dr. GarimaShrivastav; Dr. ManjuKhari; Dr. Abha Jain; Prof. Manav Ashok Thakur; Samruddhi Sunil Randhe	IMF System: Intelligent Mobile Finding System	201921039854	Published 2019

49	Dr. Rajeev Kumar; Dkorra Ravi Kumar; Dr. NamitGupta;Dr. S.Inderjeet Singh; Dr. SANTOSH Kumar Allemki; Dr. Giriraj Kumar Prajapati; MukeshPatidar; MittapallySadanandam; V.Praveen Kumar	Process For Formation Of Capacitor Structure For Non Volatile Memory On Germanium Nanocrystals	201941033347	Published 2019
50	Dr. Arpit Jain; Pranav Shankar RaoPise; UrmilaDattatrayDeshmukh; Dr. Shadab Adam Pattekari; Prof.(Dr.) S.B.Chordiya	AIB Satellite: AI Based Satellite To Detection The Object At Location	201911034316	Published 2019
51	Dr. Rajeev Kumar ; Dr. Ashutosh Kumar Bhatt	A Process To Analyze Defects In Software	201911020778	Published 2019
52	Dr. Pankaj Goswami & Dr. Garima Goswami	A LOW-COST INDIAN CURRENCY IDENTIFIER FOR VISUALLY IMPAIRED PERSONS	202011044582	Published, 2020
53	Dr. Pankaj Goswami & Dr. Garima Goswami	THE SLOTTED PIN DIODE SWITCHED FREQUENCY RECONFIGURABLEANTENNA FOR FREQUENCY SHIFT-BASED INTERNETS OF THINGS APPLICATIONS	202011027385	Published, 2020
54	Dr. Pankaj Goswami & Dr. Garima Goswami	LOW COST GSM BASED SMART IRRIGATION SWITCH WITH 3 PHASES TO SINGLE PHASE SELECTOR	2020110024218	Published, 2020
55	Dr. Pankaj Goswami & Dr. Garima Goswami	LOW COST VOICE ENABLED MULTI SENSE SMART STICK FOR VISUALLY IMPAIRED PERSON	202011009013	Published, 2020
56	Dr. Pankaj Goswami, Dr. Garima Goswami & Prof R K Dwivedi	AN INTERNET OF THINGS BASED SMART HI-TECH BUILDING SYSTEM FOR COVID PROTECTION	202011029521	Published, 2020
57	Dr. Pankaj Goswami, Dr. Garima Goswami & Prof R K Dwivedi	A PREDICTIVE ACCIDENT PREVENTION SYSTEM FOR VEHICLE SAFETY ON SHARP TURNS OF HILLY ROAD	202011033274	Published, 2020
58	Dr. Pankaj Goswami, Dr. Garima Goswami & Prof R K Dwivedi	A SMART ADAPTIVE NEURAL FUZZY INTERFACE SUPERVISED ACTIVE POWER FILTER FOR HARMONIC DISTORTION CONTROL IN AC POWER DRIVEN IOT DEVICES	202011009012	Published, 2021
59	Dr. Pankaj Goswami, Dr. Garima Goswami & Prof R K Dwivedi	A FRACTAL TRIDENT SHAPE LARGE BAND ANTENNA FOR MULTIPLE FREQUENCY-BASED INTERNETS OF THINGS APPLICATIONS	201911054606	Published, 2019

60	Dr. Pankaj Goswami & Dr. Garima Goswami	AN AUTOMATIC SPECTACLES SENSES TO PROTECT EYE FROM EXCESSIVE HARMFUL POTICAL RADIATIONS	2021100065	Granted, 2021
61	Pradeep Kr. Verma, Raghvendra Kumar Singh, Umesh Kr. Singh,Dr. Garima Goswam	PORTABLE CHARGING DEVICE	202111007865 A	Published, 2021
62	Dr. Ashendra Saxena, Rahul Vishnoi,Dr. Pankaj Goswami, Sakshi Singh, Neeraj Kaushik	AUTOMATED PET HEALTH AND HYGIENE MANAGEMENT SYSTEM	202111007866 A	Published, 2021
63	Rahul Vishnoi,Dr. Pankaj Goswami, Neeraj Kaushik, Prashant Kumar	: SECURED SEMI-AUTOMATED TENT	202111007867 A	Published, 2021
64	Arun Gupta,Sunil Kumar,Sunil K Gaur, Anurag Srivastava	SKIING ASSISTANCE DEVICE	202111007868 A	Published, 2021
65	Rahul Vishnoi,Dr. Pankaj Goswami, Neeraj Kaushik, Prashant Kumar	MULTIPURPOSE CARD PLAYING DEVICE	202111007869 A	Published, 2021
66	Dr.Gulista Khan, Mahir Hussain,.K.B.Anand, Shri Bhagwan,Harish Kumar	FOOD SLICING AND CLEANING DEVICE	202111007870 A	Published, 2021
67	Sakshi Singh,Rahul Vishnoi, Dr. Pankaj Goswami, Neeraj Kaushik	MODULAR DRINK WARE DEVICE	202111007871 A	Published, 2021
68	Amit Singh, Sakshi Singh, Rahul Vishnoi, Dr. Pankaj Goswami, Prashant Kumar	CUSTOMIZED PLANT WATERING AND PROTECTION SYSTEM	202111007872 A	Published, 2021
69	Sakshi Singh, Rahul Vishnoi, Dr. Pankaj Goswami, Prashant Kumar	PRIVACY BASED FACE COVER	202111007874 A	Published, 2021
70	Dr. Arpit Jain,Sakshi Singh, Rahul Vishnoi, Dr. Pankaj Goswami, Prashant Kumar	MULTIFUNCTIONAL DENTAL CARE DEVICE	202111007876 A	Published, 2021
71	Dr. Shambhu Bhardwaj, Arun Gupta,Sunil Kumar ,Sunil K Gaur , Anurag Srivastava	CEILING FAN CLEANING DEVICE	202111007877 A	Published, 2021
72	Arun Gupta,Sunil Kumar,Sunil K Gaur, Anurag Srivastava	WATER RAFTING SAFETY SYSTEM	202111007878 A	Published, 2021
73	Rahul Rathore,Rahul Vishnoi,Dr. Pankaj Goswami, Prashant Kumar, Neeraj Kaushik	TILE INSTALLATION SYSTEM	202111007880 A	Published, 2021
74	Dr. Ajit Kumar, Dr. Vipin Kumar, Laxmi Kant Tiwari , Dr. Abhinav Saxena, Dr. Kamesh,Dr. Alok Gahlot, Ashok Kumar,Dr. Gopal Gupta	AUTOMATIC ABACUS LEARNING DEVICE	202111012603 A	Published, 2021
75	Shri Bhagwan, Harish Kumar, Mahir Husain, Arun Gupta, Sunil Kumar, Anurag Srivastava, Sunil Kumar Gaur, K. B. Anand	AUTOMATED PUBLIC BENCH	202111012612 A	Published, 2021
76	K.B. Anand, Shri Bhagwan,Harish Kumar, Mahir Husain, Arun Gupta, Sunil Kumar, Anurag Srivastava, Sunil Kumar Gaur	MULTIFUNCTIONAL INFANT PROTETCTION DEVICE	202111012615 A	Published, 2021

77	Harish Kumar, Mahir Husain, Arun Gupta, Sunil Kumar, Anurag Srivastava,Sunil Kumar Gaur, K.B. Anand, Shri Bhagwan	AQUATIC BASED PERSONAL PROTECTION DEVICE	202111012618 A	Published, 2021
78	Mahir Husain, Arun Gupta, Sunil Kumar, Anurag Srivastava, Sunil Kumar Gaur,K.B.Anand, Shri Bhagwan, Harish Kumar	PORTABLE FECES COLLECTING DEVICE	202111012622 A	Published, 2021

- **Ph.D. Guided /Ph.D. Awarded During The Assessment Period While Working In The Institute (4)**

Table 5.8.1.10 : List of Ph.D Guided Details

Sr. No	Name of the Supervisor	Name of Guided Student	Awarded / Ongoing	Student Register No	University	Year of Enrollment
1	Dr. R.K. Dwivedi	Sanju Mishra	Awarded in Nov 2019	TMG 13 Ph.D./89	TMU, Moradabad	2013
		Gulista Khan	Awarded in Nov 2019	TCA 15 Ph.D./112	TMU, Moradabad	2015
		Sanjive Tyagi	ODC held on 09 April, 2021	TCA 15 Ph.D./133	TMU, Moradabad	2016
		Ishuita Sen Gupta	Thesis Submitted	TCA 14 Ph.D./102	TMU, Moradabad	2015
		Parul Choudhary	Ongoing	TCA 15 Ph.D./135	TMU, Moradabad	2016
		Mohan Vishal Gupta	Ongoing	TCA18 Ph.D./159	TMU, Moradabad	2019
		Vineet Saxena	Ongoing	TCA18 Ph.D./158	TMU, Moradabad	2019
		Navneet Vishnoi	Ongoing	TCA 19Ph.D./176	TMU, Moradabad	2020
		Amit Singh	Ongoing	TCA 19 Ph.D./175	TMU, Moradabad	2020
		Hina Hashmi	Ongoing	TCA 20 Ph.D./186	TMU, Moradabad	2020
		Vikas Yadav	Ongoing	TCA 20 Ph.D./184	TMU, Moradabad	2020
		Jyoti Ranjan Labh	Ongoing	TCA 20 Ph.D./193	TMU, Moradabad	2020
		Atul Mathur	Ongoing	TCA 20 Ph.D./195	TMU, Moradabad	2020
		Rajendra Prasad Pandey	Ongoing	TCA 20 Ph.D. /219	TMU, Moradabad	2021
2	Dr. Ashendra Kumar Saxena	Nirmala Sharma	Awarded in June, 2017	TMG 12 Ph.D./75	TMU, Moradabad	2012
		Anamol Chand Jain	Awarded in Nov 2021	TMG 12 Ph.D./62	TMU, Moradabad	2012

		Sanjive Tyagi	ODC held on 09 April, 2021	TCA 15 Ph.D./133	TMU, Moradabad	2016
		Rohilla Naaz	Ongoing	TCA18 Ph.D./160	TMU, Moradabad	2019
		Sharad Gupta	Ongoing	TCA 20 Ph.D. /235	TMU, Moradabad	2021
		Khyati	Ongoing	TEN 20 Ph.D. /202	TMU, Moradabad	2020
		Ajeet	Ongoing	TEN 20 Ph.D. /203	TMU, Moradabad	2020
3	Dr. Ashok Kumar	Gaurav Kumar Rajput	Ongoing	TCA 20 Ph.D./185	TMU, Moradabad	2020
		Akshay Kumar Siddhu	Ongoing	TCA 20 Ph.D./181	TMU, Moradabad	2020
		JyotiRanjan Labh	Ongoing	TCA 20 Ph.D./193	TMU, Moradabad	2020
		Trang Jain	Ongoing	TCA 20 Ph.D./187	TMU, Moradabad	2020
		Sulender	Ongoing	TCA 20 Ph.D. /233	TMU, Moradabad	2021
4	Dr. Shakti Kundu	Gaurav Kumar Rajput	Ongoing	TCA 20 Ph.D./185	TMU, Moradabad	2020
		Aishwarya Tomer	Ongoing	TCA 20 Ph.D./183	TMU, Moradabad	2020
		Akshay Kumar Siddhu	Ongoing	TCA 20 Ph.D./181	TMU, Moradabad	2020
		Sulender	Ongoing	TCA 20 Ph.D. /233	TMU, Moradabad	2021
5	Dr. Arpit jain	Trang Jain	Ongoing	TCA 20 Ph.D./187	TMU, Moradabad	2020
		Vikas Yadav	Ongoing	TCA 20 Ph.D./184	TMU, Moradabad	2020
		Atul Mathur	Ongoing	TCA 20 Ph.D./195	TMU, Moradabad	2020
		Sharad Gupta	Ongoing	TCA 20 Ph.D. /235	TMU, Moradabad	2021
		Anil Kumar	Ongoing	TCA 20 Ph.D. /234	TMU, Moradabad	2021
6	Dr. Gulista Khan	Aishwarya Tomer	Ongoing	TCA 20 Ph.D./183	TMU, Moradabad	2020
		Anil Kumar	Ongoing	TCA 20 Ph.D. /234	TMU, Moradabad	2021
7	Dr. Pankaj Kumar Goswami	Mr. Rahul Vishnoi	Ongoing	TEN 20 PhD/205	TMU, Moradabad	2020

		Mrs. Sakshi Singh	Ongoing	TEN 20 PhD/213	TMU, Moradabad	2021
		Mr. Jitesh Verma	Ongoing	TEN 20 PhD/214	TMU, Moradabad	2021
8	Dr.Garima Goswami	Mr. Pradeep Verma	Ongoing	TEN 20 PhD/222	TMU, Moradabad	2021
		Mr. Basharat Ahmad	Ongoing	TEN 20 PhD/212	TMU, Moradabad	2021
		Mr. Anuj Sharma	Ongoing	TEN 20 PhD/218	TMU, Moradabad	2021

Table 5.8.1. 11 : List of Faculties Awarded Ph.D.

Sr. No	Name of Faculty	Name of the Supervisor	Awarded / Ongoing	Student Register No	University	Year of Enrollment
1	Dr. Gulista Khan	Dr. R. K. Dwivedi	Awarded in Nov 2019	TCA 15 Ph.D./112	TMU, Moradabad	2015
2	Dr. Ashok Kumar	Prof. Karamjit Bhatiya	Awarded in June 2019	11011	Gurukula Kangri, Haridwar	2012
3	Dr. Garima Goswami	Dr Sudhir Kumar Sharma	Awarded in 2019	JNU-jpr/Ph.D/ECE/2015/006	JNU, Jaipur	2015
4	Dr. Pankaj Goswami	Dr Sudhir Kumar Sharma	Awarded in 2019	JNU-jpr/Ph.D/ECE/2015/007	JNU, Jaipur	2015
5	Dr Arpit Jain	Prof. Sanjeev Kumar Sharma	Awarded on Dec 2018	TEN12Ph.D./83	TMU, Moradabad	2013

Table 5.8.1.12 List of Faculty pursuing Ph.D.

S. N	Name	Registration No	Month and Year of Registration	Research Supervisor Detail		Research Area
				Name	University	
1	Ms. Sakshi Singh	TEN20PHD/213	Mar-20	Dr.Pankaj Kumar Goswami	TMU	Design of Ultra Wide Band Antennas
2	Mr. Kamal Kumar Gola	42000382	December, 2020	Not Decided	LPU	Underwater Acoustic Sensor Networks
3	Mr. Rahul Rathore	20380178015	December, 2020	Not Decided	DBU	AI

4	Ms. Neha Anand	1203213509	December, 2020	Not Decided	DBU	English Literature
5	Mr. Pradeep Kr. Verma	TEN20PHD/222	December, 2020	Not Decided	TMU	Control Scheme for Power Quality Issues associated with Smart Grid
6	Mr. Rupal Gupta	7816494016	27.11.2017	Dr. Sanjay Kumar Malik	GGSIPU New Delhi	Semantic Web
7	Mr. Namit Gupta	1.50001E+11	17.12.2015	Dr. Kunwar Singh Vaisla	UTU Dehradun	Wireless Sensor Network Area
8	Mr. Ratnesh Kumar Shukla	Ph.D/15/CSE/1848	21-Jul-15	Dr. Arvind Kumar Tiwari	KNIT, Sultanpur, Dr.APJ Abdul Kalam Technical University, Lucknow	Machine Learning
9	Ms. Anu Sharma	150001001188	Dec, 2015	Dr. MK Sharma, Amrapali Institute , Haldwani (Uttarakhand), Dr. Rakesh Kumar Dwivedi, TMU, Moradabad	UTTRAKHAND TECHNICAL UNIVERSITY DEHRADUN	DATA MINING
10	Ms. Neeraj Kumari	150001001246	17th December 2015	Prof Rakesh Kr Dwivedi, TMU,DrAshutosh Kr Bhatt Birla Institute Haldwani	UTTRAKHAND TECHNICAL UNIVERSITY DEHRADUN	Machine Learning

5.8.2 Sponsored Research (20) Institute Marks :

2019-20 (CAYm1)

Project Title	Duration	Funding Agency	Amount(in Rupees)

2018-19 (CAYm2)

Project Title	Duration	Funding Agency	Amount(in Rupees)

2017-18 (CAYm3)

Project Title	Duration	Funding Agency	Amount(in Rupees)

Cumulative Amount(X + Y + Z) =

5.8.3 Development activities (15) Institute Marks : 15.00

5.8.3.1 Product Development

1. Product Title: Farmer Assistant system.

Faculty Guide: Dr. R.K.Dwivedi, Mr. Rajendra Prasad Pandey

Students Name: Aarjav kumar jain and Team

Product Description: The approach is to build a Software-Web App that can take the input from farmers and in return tell them the precise land parcel specific fertilizer and also give an input usage plan to minimize the cost & maximize the returns to the farmers. The system should be capable enough to analyze the right parameters and use them precisely to reduce the cost of production. The system should be able to precisely identify the right parameters to analyze and then give the needed output of the analyses to the farmer with the precise land parcel specific fertilizer and an input usage plan to maximize return and reduce cost of production.

2. Product Title: CNS/ATM Predictive Maintenance scheduling system (Communications Navigation and Surveillance for Air Traffic Management)

Faculty Guide: Mr. Rupal Gupta, Mr. Ashish Bishnoi

Students Name: Prerna Jain and Team

Product Description: As current practice, various CNS/ATM facilities, preventive maintenance is carried out on daily, weekly, monthly, bi-annual and annual basis which were having following limitations:

a.) Paper based that is subjected to manipulation

b.) Localized - Station based

c.) Non-standard Compliance

d.) Missing linkage to equipment maintenance history

e.) Centralized monitoring not possible

f.) Storage for stipulated time is cumbersome.

Developed Product intents to achieve the below objectives:

- Automating the existing manual reports into digitized reports.
- Data warehousing for central monitoring and leakage detection.
- Ensuring the operational data collected comply the required Standard.

5.8.3.2 Research laboratories

Department of Computer Science and Engineering has a following research lab:

Table:5.8.3.1 Research laboratories

Sr. No.	Name of the Laboratory	No. of System	Configuration
1	Shantanu Narayan LAb (Lab 3221)	15	Processor-Core i5, RAM-8 GB, HDD- 1 TB, NIC-yes, Keyboard-yes, Mouse-yes, Monitor-LED, Graphics Card-Radeon Pro 555X or 560X graphics 4GB, OS-MAC
2	Kasturirangan Lab (Lab 3234)	60	Processor-Core I5, RAM-4/ 8 GB, HDD-500 GB, NIC, Keyboard, Mouse, Monitor-LED, OS- Win. 8.1
3	Vikram Sarabhai Lab	60	Intel core i5 , 4 gb RAM DDR3 500 gb Hard Disk
4	Virtual Lab	5	Intel core i5 , 8500 cpu, 8 gb RAM DDR3 500 gb Hard Disk TB(64 bit)

5.8.3.3 Instructional Materials

Manual of all the laboratories experiments has been prepared and placed in respective labs.

5.8.3.4 Working models/charts/monograms etc.–

Our students have developed few IoT based products. Few of these products are detailed below:

1. Product Title: Gideon.

Faculty Guide: Mr. Rupal Gupta

Students Name: Vaishali jain (TCA1709064), Aarjav kumar jain (TCA1709119), Tarun kumar jain (TCA1709120)

Product Description: It is an IOT Based Robot used to perform certain operations like voice interaction, music playback, making to-do lists, and providing weather, stocks, sports, and other real-time information, such as news. The Robot runs on four wheels controlled via Servo motors and have sensors like voice to help it in being operated. It works as a Personal Assistant and Path follower. It have Visual Interface for operability and perform image processing for authentication and object detection. It uses APIs for the information of surrounding, temperature services and Resource management.



Figure 5.8.3 Gideon

2. Product Title: Air Pollution Detection Trough IOT.

Faculty Guide: Mr. Rupal Gupta

Students Name: Prerna Jain (TCA1709052), Pranjal Jain (TCA1709061)

Product Description: "AIR POLLUTION DETECTION THROUGH IOT" is implemented to measure and display temperature and humidity level of the environment. Along with it gas leakage in the industries will also be detected. The main purpose is to combine advanced detection technologies to produce an air quality sensing system with advanced capabilities to provide low cost comprehensive monitoring. The sensed data will be displayed in user friendly format in LCD display and Graphs will be generated on Things Speak from the real time data.**Figure 5.8.3.2: Air Pollution Detection Trough IOT**

5.8.4 Consultancy (from Industry) (20) Institute Marks : 20.00

2019-20 (CAYm1)

Project Title	Duration	Funding Agency	Amount(in Rupees)
Inventory Mana	One year	C. L. GUPTA E	1180000.00
Reliability impr	One year	Vimal Transfori	1770000.00
			Total Amount(X): 2950000.00

2018-19 (CAYm2)

Project Title	Duration	Funding Agency	Amount(in Rupees)
Brass Handicra	One Year	C. L. GUPTA E	540000.00
			Total Amount(Y): 540000.00

2017-18 (CAYm3)

Project Title	Duration	Funding Agency	Amount(in Rupees)

Cumulative Amount(X + Y + Z) =

5.9 Faculty Performance Appraisal and Development System (FPADS) (10)

Total Marks 10.00

Institute Marks : 10.00

Department has a well defined system for faculty appraisal. Faculty fills a PMS (Performance Management System) form after every assessment year. The purpose of PMS is to facilitate the individuals to perform to ones potential through direction, guidance, support & review. The performance evaluation system is developed to be flexible, transparent & objective to support the performance. Sample of PMS form shown below:

Table 5.9 FPADS

TEERTHANKER MAHAVEER UNIVERSITY
(Established under Govt. of U. P. Act No. 30, 2008)
Delhi Road, Moradabad (U.P)

1

PMS – Teaching Faculty (TMU)

Purpose: The purpose of PMS is to facilitate the individuals to perform to ones potential through direction, guidance, support & review. The performance evaluation system is developed to be flexible, transparent & objective to support the performance.

The teaching faculty will be evaluated on the following relevant criteria:

Components:		Points			
A	Teaching	(160)			
B	Research & Publication	(60)			
C	Institution building	(20)			
D	Self-development	(15)			
E	Projects, Consultancy & MDPs	(15)			
F	Peer / industry / institutional connect	(10)			
G	Student support & counselling	(10)			
H	Conferences &/ Seminars / Workshops / Events organized& Participation	(10)			
	Total	(300)			

Part – I					
A	Teaching (160)		Targets (In points)	Self-Assessment(Actual points earned)	Points post moderation (Based on evidence provided)
i)	Courses taught (Max 30 credits load) (120)				
	4 points for each credit taught including practical(lab) & tutorial				
	Students feedback (Use average of the two multipliers from following a &b criteria for specific course)				

a)	Multiplier factor for course based on student feedback taken on a scale of 1-5				
	1 multiplier if feedback score is > 4				
	.9 multiplier if feedback score is 3.5– 4				
	.8 multiplier if feedback score is 3< 3.5				
	.7 multiplier if feedback score is 2.5< 3				
	.6 multiplier if feedback score is 2< 2.5				
	.5 multiplier if feedback score is 1.5< 2				
b)	Multiplier factor per course for student result				
	1 multiplier if average pass result of the course > 90%				
	.9 multiplier if average pass result of the course 81%-90%				
	. 8 multiplier if average pass result of the course 71%-80%				
	7 multiplier if average pass result of the course 61%-70%				
	.6 multiplier if average pass result of the course 51%-60%				
	.5 multiplier if average pass result of the course 41%-50%				
ii)	Innovative pedagogy (16)				
	points based on innovations (experiential learning methods) made in classroom delivery.				
	2 Points for every one guest lecture invited from top 200 institutions ranked in NIRF or A grade or higher accredited institutes (also IIMs, IITs & other equivalent institutions)				
	2 Points for every one guest lecture invited from top firms				
	2 points for delivery using recognized & proved innovative teaching methods				
iii)	New courses / programmes developed (5)				
	1 Point for developing a completely new course				
	2 Points for contribution in developing or modifying a new programme				
	1 Point for revising the syllabus of a course				
	1 point for developing or revising an experiment				
	1 point for developing lab manual				
	1 point for developing an FDP / MDP				

iv)	Contribution as member of BOS, BOM, Senate/ Academic council, Curriculum development team etc. (3)				
	3 Points for being member of any of the above body either in TMU or on external institution				
v)	Project work supervised (16)				
	2 points for every field project supervised				
	3 points for every industry project (real time problem) supervised				
	4 points for every project that has won any first three positions in a competition (irrespective of no. of students supervised)				
	2 points for every project of the student that has entered in the competition				
	Total for A				
B	Research & Publication (60)				
i)	Papers &Books published (30)				
	10 points for each paper in indexed Journals (Scopus, web of science, pubmed & ICI)				
	6 points for Paper published in UGC listed journals				
	3 points for every one article in National magazine or newspaper				
	3 points designing manual, authoring or co-authoring edited book				
	6 points for one book published by national publishers				
	12 points for one book published by international publishers				
ii)	Research supervision (5) (You cant claim twice the points for the same work in the same year) Note: Wherever Ph.D supervision not applicable, it must be reduced from the total points to calculate % of achievement)				
	5 points for every Ph D awarded				
	3 points for pre submission presentation completed & approved by CRC				
	2 points for every active registered candidate (have been continually submitting progress report without any break)				
	1 point for PG / M .Phil level dissertation supervised & one paper published (in UGC listed journal) out of it				

iii)	Research paper published in conference proceedings (10)				
	2 points for every research paper published in national conference proceedings				
	4 points for every research paper published in international conference proceedings				
iv)	Research project (15)				
	15 points for a patent awarded / published				
	10 points per research project funded by government bodies				
	5 points per research project funded by non - government bodies				
	5 points per research project funded by seed money (University)				
	3 points for publishing technical reports				
	2 points for submitting technical reports				
	Total for B				
C	Institution building (20)				
	10 points for university & college level administrative responsibility				
	6 points for departmental &programme level responsibility				
	5 points for each FDP delivered within or outside university				
	4 points for organizing non-academic events				
	5 points for contribution in admissions & placements				
	3 points for delivering workshop for students or members of faculty				
	8 points for publishing an institutional news letter / magazine & institutional journals (member of editorial Board)				
	3 points for submission of examination /assessment works within stipulated time & quality in terms of objectivity & fairness				
	2 points for contribution to the Non - academic committee as a member				
	Total for C				
D	Self development (15)				
	10 points for Ph D completed (current year)				
	5 points for Ph D registered				

	10 points for industry immersion training (at Least for 2 weeks)				
	5 points for attending minimum 2 days workshops conducted by corporate or top institutes or TMU for skill enhancement				
	5 points for attending UGC / AICTE sponsored refresher course / induction programme / FDPs conducted by any of the top University (NAAC A or higher graded or NIRF ranking up to 150)				
	5 points for each MOOC course completed				
	3 points for thesis examination				
	2 points for invitations for extension lectures / thesis examiner / PG level project evaluation				
	2 points for being member of professional bodies				
	Total for D				
E	Projects, Consultancy, MDPs / FDPs & Start-ups (20) (Separate points are for each category)				
	4 points for revenue up to Rs. 50,000/-				
	6 points for revenue > Rs. 50,000 < Rs. 1,00,000				
	10 points for revenue > Rs. 1,00,000 < Rs. 2,00,000				
	15 points for revenue > Rs. 2,00,000 < Rs. 3,00,000				
	20 points for revenue > Rs. 3,00,000				
	20 points for incubating one start-up				
	Total for E				
F	Peer / Institution / Industry connect (10)				
	10 points per MOU for collaborative work & resource sharing etc at international level				
	5 points per MOU for collaborative work & resource sharing etc at national level				
	5 points per Social / Rural / NSS / NCC / Red cross / NGO project or activity etc.				
	5 points for award / fellowships received at national & international level				
	3 points for every Ph.D thesis evaluation or paper setting in, related area, university / autonomous institution				
	2 points for contribution to the Non - academic committee as a member				
	5 points for industry MOU for placement / OJT / internship / industry immersion (company revenue > Rs. 100cr. or a technology start-up)				

	Total for F				
G	Student support &counseling (10)				
	5 points for organizing one student capability enhancement programme (preparation for competitive exam like govt. services NET/GATE/CAT/ JRF etc)				
	5 points for per batch mentoring (10 students per batch)				
	5 points for contribution to slow learners				
	5 points for organizing &accompanying students for one industry visit / education trip / excursion				
	5 points for organizing &accompanying students on international trips				
	Total for G				
H	Conferences / Seminars / Workshops / Symposia organized & Participation (10)				
	5 points for international events organized (as a convener, secretary & coordinator of an activity)				
	2 points for national events organized (as a convener, secretary & coordinator of an activity)				
	4 points for paper presentation in international conference				
	2 points for paper presentation in national conference				
	5 points for organizing one workshop / seminar on IPR & industry - academia innovative practice (Convener, Secretary & Coordinator of an activity)				
	Total for H				
Part II					
	Comments & suggestions after mid-term review of individual progress				
	a)				
	b)				
	c)				
	d)				
	e)				
		Grand total			
	Date:	Signature of assesses		Reporting officer's signature	

Part III					
	Qualitative assessment of Individual (total 100 points & 10 points for each criteria)				
	a) Commitment to work / department / university				
	b) Relationship with colleagues & superiors				
	c) Punctuality & regularity (class room delivery)				
	d) Maturity & temperament				
	e) Work knowledge				
	f) Accessibility				
	g) Self improvement				
	h) Ability to deal with difficult situations				
	i) Communication skills				
	j) Leadership				
Part IV					
	Self-assessment:				
	Part I	Part III			
	Points	Points			
		Signature of the assessee (with date)			
Part V					
	Controlling officer's assessment (based on evidence presented)				
	Part I	Part III			
	Points	Points			
	(Assessee signature with date) (Reporting officers signature with date)				
Part VI					
	Reviewing officer's approval				
	Comments, if any				
Part VII					
	HR department				

	Total points	Final letter grade		
	Recommendations			
	1			
	2			
	3			
	Approval & comments	Signature & seal		
	(Vice Chancellor)			

5.10 Visiting/Adjunct/Emeritus Faculty etc. (10)

Total Marks 10.00

Institute Marks : 10.00

Table 5.9.1 Visiting Faculty (2020-21)

S. No	Name Of The Faculty	Highest Degree	Organization	Designation	No. Of Hours	Subject	Subject Expertise
1	Ms. Rashmi Jain	M.Tech	HCL	Team Lead	50	Software Testing	Software Testing and Software Engineering
2	Dr. Inderjeet Jeetey	M.A. English	-	Assistant Professor	50	English Communication	Soft skills

Table 5.9.2 Visiting Faculty (2019-20)

S. No	Name Of The Faculty	Highest Degree	Organization	Designation	No Of Hours	Subject	Subject Expertise
1	Ms. Rashmi Jain	M.Tech	HCL	Team Lead	50	Software Testing	Software Testing and Software Engineering
2	Dr. Inderjeet Jeetey	M.A. English	-	Assistant Professor	50	English Communication	Soft skills

6 FACILITIES AND TECHNICAL SUPPORT (80)

Total Marks 80.00

6.1 Adequate and well equipped laboratories, and technical manpower (40)

Total Marks 40.00

Institute Marks : 40.00

Sr. No	Name of the Laboratory	Number of students per set up(Batch Size)	Name of the Important Equipment	Weekly utilization status(all the courses for which the lab is utilized)	Technical Manpower Support		
					Name of the Technical staff	Designation	Qualification
1	Sundar Pichai	30	60-Acer Deskt	Odd sem-8/Ev	Mr. Rishi Kant	Lab Technician	MCA
2	Rajeev Suri La	30	60-Acer Deskt	Odd Sem:12/E	Mr. Alok Varshi	Lab Technician	MCA
3	Dr A P J Kalan	30	60- HP Deskto	Odd Sem: 04/E	Mr. Akshay Sa:	Lab Technician	MCA
4	Vikram Sarabh	30	60-Lenovo Des	Odd Sem: 04/E	Mr. Umesh Cha	Lab Technician	Diploma Hardv
5	Kasturirangan	30	30 HP Desktop	Odd Sem: 06/E	Mr. Rajeev Kur	Lab Technician	MCA
6	Satya Nadella	30	60-Acer Deskt	Odd Sem: 02/E	Mr. Anugrah Sa	Lab Technician	DHNE
7	Henry ford Lab	30	C.R.O(Cathode	06	Mr Pradeep Ku	Lab Technician	ITI
8	Thomas Edisor	30	KVL/KCL Kit D	06	Mr. Anshuman	Lab Technician	Diploma
9	Charles Babba	30	Drawing Board	4	Mr. Pappu Sing	Lab Technician	ITI
10	Oliver Bulleid L	30	Lathe, Milling, I	4	Mr. Sonu	Lab Technician	ITI
11	S.S. Bhatnagai	30	Hot Air Oven, M	4	Mr Pradeep Ku	Lab Technician	B.Sc (PCB)
12	C. B. Raman L	30	Newton's ring a	4	Mr. R. K. Singh	Lab Technician	B.Sc

6.2 Laboratories maintenance and overall ambiance (10)

Total Marks 10.00

Institute Marks : 10.00

All labs are well equipped having advanced computing facilities maintained by dedicated and experienced supporting staff. The student-computer ratio is 1:1. Each laboratory maintains a Lab register for the proper lab records and are under surveillance.

Maintenance:

All the labs are well equipped and maintained:

1. All the systems are checked and updated as per the requirements, before starting the semester.
2. Technical Staffs are available for maintenance of equipments and softwares.
3. All computer labs having one10KVA or 15KVA UPS along with Batteries same are used in case of power failure in the Labs.
4. All necessary requisite softwares are installed and maintained in all computers.

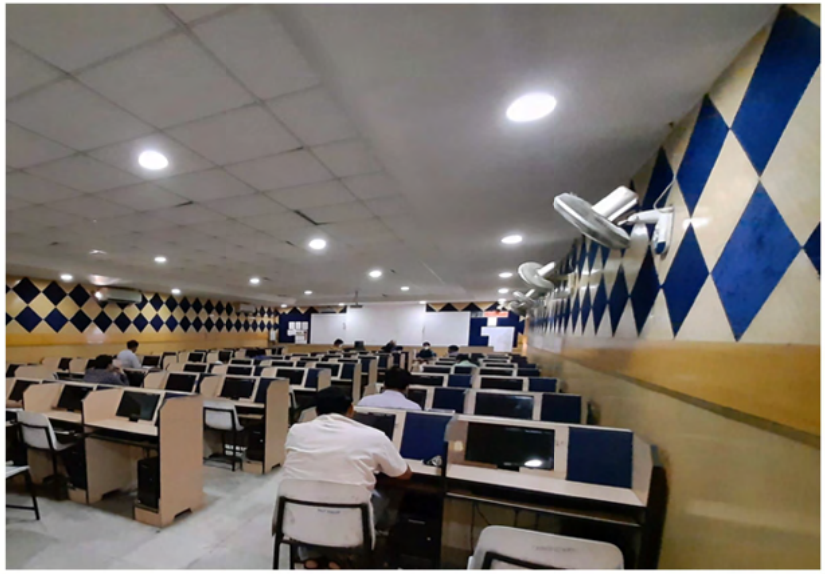
Ambiance:

1. All fully air-conditioned laboratories are equipped with state of art equipments to meet the requirements of curriculum.
2. Chair with desk is provided for individual students in Labs.
3. Labs with sufficient lights and have one entry/exit.
4. Bag Racks are available in each lab for students to place their belongings.
5. Exclusively, a project lab has been provided for the students to carry out their mini and major projects.
6. Department of Computer Science & Engineering has internet of 1 GBPS bandwidth, and Wi-Fi routers installed on each floor for good internet connectivity for students and Faculty usage.
7. Stabilized uninterrupted power supply.


DON'Ts







6.3 Safety measures in laboratories (10)

Total Marks 10.00

Institute Marks : 10.00

Sr. No	Laboratory Name	Safety Measures

1	Sundar Pichai Lab	• Fortinet firewall authentication for internet security purposes • Specific Safety Rules like Do's and Don'ts are displayed and instructed for all students. • Fire extinguishers are kept in each laboratory. • Proper earthing of all Electrical Equipments. • CCTV installed • Well trained technical supporting staff monitor the labs at all times. • Damaged system/equipment are identified and serviced at the earliest on regular basis.
2	Rajeev Suri Lab	• Fortinet firewall authentication for internet security purposes • Specific Safety Rules like Do's and Don'ts are displayed and instructed for all students. • Fire extinguishers are kept in each laboratory. • Proper earthing of all Electrical Equipments. • CCTV installed • Well trained technical supporting staff monitor the labs at all times. • Damaged system/equipment are identified and serviced at the earliest on regular basis.
3	Dr A P J Kalam Lab	• Fortinet firewall authentication for internet security purposes • Specific Safety Rules like Do's and Don'ts are displayed and instructed for all students. • Fire extinguishers are kept in each laboratory. • Proper earthing of all Electrical Equipments. • CCTV installed • Well trained technical supporting staff monitor the labs at all times. • Damaged system/equipment are identified and serviced at the earliest on regular basis.
4	Vikram Sarabhai Lab	• Fortinet firewall authentication for internet security purposes • Specific Safety Rules like Do's and Don'ts are displayed and instructed for all students. • Fire extinguishers are kept in each laboratory. • Proper earthing of all Electrical Equipments. • CCTV installed • Well trained technical supporting staff monitor the labs at all times. • Damaged system/equipment are identified and serviced at the earliest on regular basis.
5	Kasturirangan Lab	• Fortinet firewall authentication for internet security purposes • Specific Safety Rules like Do's and Don'ts are displayed and instructed for all students. • Fire extinguishers are kept in each laboratory. • Proper earthing of all Electrical Equipments. • CCTV installed • Well trained technical supporting staff monitor the labs at all times. • Damaged system/equipment are identified and serviced at the earliest on regular basis.
6	Satya Nadella Lab	• Fortinet firewall authentication for internet security purposes • Specific Safety Rules like Do's and Don'ts are displayed and instructed for all students. • Fire extinguishers are kept in each laboratory. • Proper earthing of all Electrical Equipments. • CCTV installed • Well trained technical supporting staff monitor the labs at all times. • Damaged system/equipment are identified and serviced at the earliest on regular basis.
7	Henry ford Lab	• Specific Safety Rules like Do's and Don'ts are displayed and instructed for all students. • Fire extinguishers are kept in each laboratory. • Proper earthing of all Electrical Equipment's. • CCTV installed • Well trained technical supporting staff monitor the labs at all times. • Damaged system/equipment are identified and serviced at the earliest on regular basis.
8	Thomas Edison Lab	• Specific Safety Rules like Do's and Don'ts are displayed and instructed for all students. • Fire extinguishers are kept in each laboratory. • Proper earthing of all Electrical Equipment's. • CCTV installed • Well trained technical supporting staff monitor the labs at all times. • Damaged system/equipment are identified and serviced at the earliest on regular basis. • Electric Shock proof mat.
9	Charles Babbage Lab	• Specific Safety Rules like Do's and Don'ts are displayed and instructed for all students. • Fire extinguishers are kept in each laboratory. • Proper earthing of all Electrical Equipment's. • CCTV installed • Well trained technical supporting staff monitor the labs at all times. • Damaged system/equipment are identified and serviced at the earliest on regular basis.
10	Oliver Bulleid Lab	• Specific Safety Rules like Do's and Don'ts are displayed and instructed for all students. • Fire extinguishers are kept in each laboratory. • Proper earthing of all Electrical Equipment's. • CCTV installed • Well trained technical supporting staff monitor the labs at all times. • Damaged system/equipment are identified and serviced at the earliest on regular basis.
11	S.S. Bhatnagar Lab	• Specific Safety Rules like Do's and Don'ts are displayed and instructed for all students. • Fire extinguishers are kept in each laboratory. • Proper earthing of all Electrical Equipment's. • CCTV installed • Well trained technical supporting staff monitor the labs at all times. • Damaged system/equipment are identified and serviced at the earliest on regular basis.

12	C. B. Raman Lab	• Specific Safety Rules like Do's and Don'ts are displayed and instructed for all students. • Fire extinguishers are kept in each laboratory. • Proper earthing of all Electrical Equipment's. • CCTV installed • Well trained technical supporting staff monitor the labs at all times. • Damaged system/equipment are identified and serviced at the earliest on regular basis.

6.4 Project laboratory (20)

Total Marks 20.00

Institute Marks : 20.00

Table 6.4.1 : Project laboratory

S. No.	Name of the Laboratory	Name of the Important equipment	Utilization
1	Kasturirangan Lab	30 HP Desktop Intel Core™ i5-4570 CPU @ 2.90GHz, HDD-500GB, RAM- 8GB, 18.5" LED, Keyboard, Mouse 30 HP Desktop Intel Core™ i5-8400 CPU @ 2.80GHz, HDD-01 TB, RAM- 16GB, 18.5" LED, Keyboard, Mouse	6 hr per day open for Students and Faculty members. Students Utilize lab for their Minor/Major projects Average usgae 4 hr per day.
		Android studio setup	
		Python 3.9	
		R Studio Desktop 1.4.1103	
		ARDUINO 1.8.13	
		Apache Hadoop 3.1.2	
		Java -JDK with NetBeans IDE 8.1	
		Apache Maven	
		Git Bash 2.3.1.1	
		Docker Desktop	
		Jenkins	
		IBM SPSS 27.00	
		Turnitin -Plagiarism	
		Projector, audio systems	

7 CONTINUOUS IMPROVEMENT (75)

Total Marks 75.00

7.1 Actions taken based on the results of evaluation of each of the COs, POs & PSOs (30)

Total Marks 30.00

Institute Marks : 30.00

POs Attainment Levels and Actions for Improvement- (2019-20)

POs	Target Level	Attainment Level	Observations

PO 1 : Engineering Knowledge

PO 1	1.8	1.87	1. Target achieved. 2. Courses ECS-401 and ECS-503 have scope of further enhanced attainment.
• Action 1: More emphasis is to be given on tutorial classes and assignments problem solving in Theory of Computation (ECS-401) and Analysis and Design of Algorithms (ECS-503) courses. • Action 2: More emphasis is to be given for the visualization of computation in the form of Theory of Computation (ECS-401) machine.			

PO 2 : Problem Analysis

PO 2	1.8	2.05	1. Target significantly achieved. 2. Courses EAS-113 and ECS-201 have scope for further enhanced attainment.
• Action 1: Video lectures illustrating chemical reaction, & Challenging Assignment in Engineering Chemistry EAS-113) is to be given to the students. • Action 2: Extra Lab sessions to execute C program's for better understanding of the course of Computer Basics in C Programming (ECS-201) is to be given to the students.			

PO 3 : Design/development of Solutions

PO 3	1.8	2.03	1. Target significantly achieved. 2. Courses ECS-608 and ECS-501 have scope for further enhanced attainment.
• Action 1: Extra Practical lab sessions by using Cisco Packet Tracer in computer network model (ECS-608) has been given to the students. • Action 2: Video lectures and Tutorials illustrating complex concepts in compiler design (ECS-501) has been given to the students.			

PO 4 : Conduct Investigations of Complex Problems

PO 4	1.8	1.93	1. Target achieved. 2. Courses EAS-301 and ECS-503 have scope for further enhanced attainment.
• Action 1: Extra classes of Numerical problem solving in Mathematics III (EAS-301) has been provided to the students. • Action 2: Extra classes has been conducted in Analysis & Design of Algorithm (ECS-503) for enhancing the Complex Engineering Problem skills of the students.			

PO 5 : Modern Tool Usage

PO 5	1.8	1.85	1. Target achieved. 2. Courses ECS-306 and EME-161 have scope for further enhanced attainment.
• Action 1: Extra session has been conducted for applying the concept of ER diagram and normalization in Data Base Management System (ECS-306). • Action 2: Extra sessions on exploration with modern tools has been conducted in Engineering Drawing Lab (EHM-161) to improve the modern tool use among the students.			

PO 6 : The Engineer and Society

PO 6	1.8	1.98	1. Target significantly achieved. 2. Courses ECS-501, ECS 406, ECS-791 and ECS-603 have scope for further enhanced attainment.
• Action 1: Project based on environment, health care security and social issue to be given and emphasized. • Action 2: Professional society membership of CSI and IEEE has to be given to the students for organizing and participating in social activity. • Action 3: Workshop on designing, thinking and ethical software development is to be conducted in Operating system (ECS-406) & Industrial Training & Presentation(ECS-791). • Action 4: Extra classes & extra assignment were given to solve different complex problem in Compiler Design and Construction(ECS-501) & Computer Graphics(ECS-603).			

PO 7 : Environment and Sustainability

PO 7	1.8	1.87	1. Target achieved. 2. Courses EAS-403, & ECS-703 have scope for further enhanced attainment.
• Action 1: Product development and teams from FOE CSE has participated in SIH-2020(Hackathon2020) and had won cash prize of Rs. 2.00 Lac at National Level. • Action 2: Extra Classes in Human values & professional ethics (EAS-403) & Cryptography & Network Security (ECS-703) has been conducted for weak students.			

PO 8 : Ethics

PO 8	1.8	1.66	1. Target marginally missed. 2. Courses ECS-404, EHM-503 and ECS-609 have scope for further enhanced attainment.
• Action 1: Scheduled experts lectures on ethics on Software Engineering (ECS-404). • Action 2: Ethical hacking workshop to be organized to understand professional ethics and social responsibility. • Action 3: Group exercises and challenging assignments were given in Ecommerce (ECS-609), Software Engineering (ECS-404) and Engineering and Managerial Economics (EHM-509).			

PO 9 : Individual and Team Work

PO 9	1.8	1.8	1. Target achieved. 2. Courses ECS-404, ECS-799 and ECS-899 have scope for further enhanced attainment.
• Action 1: Group projects to be assigned to the students in project phase 1 (ECS-799) and project phase 2 (ECS-899). • Action 2: More emphasis on project development by using software engineering (ECS-404) is planned to be given to the students.			

PO 10 : Communication

PO 10	1.8	2.01	1. Target significantly achieved. 2. Courses ECS-591, ECS-799 and ECS-899 have scope for further enhanced attainment.
• Action 1: Students were encourages to give presentation in project phase 1 (ECS-799) and project phase 2 (ECS-899). • Action 2: Debates and group discussion and mock interviews were arranged in industrial training (ECS-591) with the help of training and placement department.			

PO 11 : Project Management and Finance

PO 11	1.8	2.17	1. Target significantly achieved. 2. Courses ECS-704 and ECS-853 have scope for further enhanced attainment.
• Action 1: Extra classes & more emphasis in Software project development (ECS-704) subjects have been planned for all the students. • Action 2: Students were given challenging assignment & group projects in Management Information system Lab (ECS-853) to enhance the project management skills.			

PO 12 : Life-long Learning

PO 12	1.8	1.84	1. Target achieved. 2. Courses ECS-301 and ECS-401 have scope for further enhanced attainment.
• Action 1: Performance in self learning (mooc courses) and assignments in Data Structure(ECS-301) have been given to the students. • Action 2: Extra Classes and challenging assignment in Theory of computation (ECS-401) to enhance life long learning among the students have been conducted			

PSOs Attainment Levels and Actions for Improvement- (2019-20)

PSOs	Target Level	Attainment Level	Observations
PSO 1 : Developing skills for creating computational solutions with emerging technologies, programming languages, mathematical foundations, algorithmic principles and open source platforms to solve complex engineering problems.			
PSO 1	1.8	2.18	1. Target significantly achieved. 2. Courses EHM149, ECS301 and ECS501 have scope for further enhanced attained.
• Action 1: For further improvement the concept of sustainable and ethical practices is to be implemented. • Action 2: Challenging assignment is to be given in Analysis and Design of Algorithms (ECS503) and Compiler Design (ECS501). • Action 3: To develop computational skills among students for solving complex engineering problems a new course Natural language Processing (NLP) is introduced.			
PSO 2 : Ability to understand the evolutionary changes in computing by applying standard practices and skills acquired through computer engineering to provide solutions with innovative ideas and interdisciplinary research.			
PSO 2	1.8	2.16	1. Target significantly achieved. 2. Courses ECS404, ECS506 and ECS709 have scope for further enhanced attained.
• Action 1: For further enhancement of student sent for internship of Machine learning, Android and Big data. • Action 2: For Solving complex engineering problem, a new course of Python programming (EAI305) is introduced. • Action 3: To introduce interdisciplinary research a new course of Machine learning (EAI504) is introduced.			
PSO 3 : Ability to employ modern computer languages, environments, and platforms in creating innovative career paths to be an entrepreneur, and pursue higher studies in their respective domains.			
PSO 3	1.8	1.97	1. Target achieved. 2. Courses ECS709 and ECS801 have scope for further enhanced attained.
• Action 1: To make entrepreneurial new course management concepts and organization behavior(EHM403) is introduced. • Action 2: For further enhancement of social ethics a new course human values and professional ethics(EAS303) is introduced. • Action 3: A separate entrepreneurial activity center is developed to enhanced to be an entrepreneurial and pursue higher studies.			

7.2 Academic Audit and actions taken thereof during the period of Assessment (15)

Total Marks 15.00

Institute Marks : 15.00

The audit is intended to fulfil the requirement of proposed AQAR (Annual Quality Assurance Report) - Attached as an Annexure 1

i. Frequency: Every six months
ii. Audit Authority: University Administration
iii. Members:
    1. Chairperson: Other college Principals of the University
    2. Members: one or two Professors of other college of the University

This audit is intended to fulfil the requirement of proposed University Academic Audit Proforma-Attached as an annexure 1

Table 7.2.1 : Academic Audit Report (Assessment Period : 2018- 2019 (Odd Sem))

S.No.	Observation by the Peer Team	Action Item	Action Taken
1	All curriculum amendments should be addressed in BoS and BoF meetings	BOS & BOF meetings are Scheduled Curriculum changes are incorpoarted.	BoS&BoF were held on 2 Nov 2018 as per vide circular number Ref: - TMU/CCSIT/CRC17-18/Even/04 Contents/courses modified as per suggestions given by BoS, BoF (For details refer to MOM)
2	Need to add value added courses/Skill based course	English communication & soft skill, Java essential courses are proposed to be included as value addition to existing curriculum.	Proposed value added courses are included Students are enrolled and partcipated in value added courses/Skill based course courses
3	Need to summarize the feedback of all stake holders (Student, Teachers, Experts, Alumni)	Feedback data is collected,sumarized and analysed	Collected feedback data analysis is completed and curriculum changes are proposed for BoS and BoF.
4	Teaching-Learning process: Need to include students performance record.	Identification of slow, medium and fast learner based on class tests Assignments and remdial classes for slow learners keeping record of attendance, marks and extra curricular activity in mentorship booklet and update monthly	Mentor lectures are introduced in time table to discuss and monitor students performance.
5	Need to intiate consultancy based projects.	Few projects are proposed.	Research oriented faculty memebers are suggested to explore more opprtunities in consultancy based projects.
6	Need to include more activities by NSS	NSS Committee reconstitution is proposed	Commitee is reformed and proposed one event per semester

Table 7.2.2 : Academic Audit Report (Assessment Period : 2018- 2019 (Even Sem))

S.No.	Observation by the Peer Team	Action Item	Action Taken

1	All curriculum amendments should be addressed in BoS and BoF meetings ARC recommended the CBCS syllabus as per AICTE template	BOS & BOF meetings are scheduled Curriculum changes are made	BoS held on 19.01.2019 and BoF held on 21.01.2019 as per vide circular number Ref: - TMU/CCSIT/CRCI 8-1 9/EVEN/01 Contents/courses modified as per suggestions given byBoS, BoF (for details refer to MOM)
2	Short term industry collaborative programs need to be introduced	Industry collaboration and short-term course identification.	Short term industry collaborative programs conducted
3	All stake holders (Student, Teachers, Experts, Alumni) Feedback on curriculum is required	curriculum feedback proforma has been created and proposed to be filled by all stake holders	Online implementation has been initiated
4	To include record of academic plan deviation and students attendance analysis in Teaching-Learning process	Keeping record of deviation between planned vs actual academic activities. Mentorship booklet should be updated monthly. Student's attendance registers need to be updated daily	Daily generated attendance report are monitored weekly and feedback generated by the HoD is put up for Director's remark
5	Teacher Quality improvement: Research and Higher Education attributes need to be assessed	Faculty members with PhD/NET/GATE ratio is need to be improved. Motivate non Ph.D faculty members to register in Ph.D Faculty members should start participating in online certification courses in their relevant fields. Faculty members are need to be encouraged to write research papers/book chapters/book etc.	Faculty members assesment data is compiled Few faculty members are registered in PhD Faculty members are enrolled in MOOC/NPTEL Courses One Research publications per faculty member is expected in each semester.
6	Research Projects based activities should be enhanced.	Seed money/external agency projects writing and submission must be enhanced	Professors and associate professors are encouraged to write projects and few proposals have been submitted for seed money and external funding agency
7	Record keeping of student's Progression	Students from UG to PG Nos improvement and motivation	Mentors and Counsellors are given responsibilty to counsel the students regarding higher education
8	Students Participation in co-curricular& Extra-curricular activities	Mentors are instructed to make a complete strategic plan of student's participation in various activities as per their skills and interest	Students involvement increased in the college activities. A marks component is created in General Proficiency (GP) assessment.

Table 7.2.3 : Academic Audit Report (Assessment Period : 2019- 2020 (Odd Sem))

S. No.	Observation by the Peer Team	Action Item	Action Taken
1	All curriculum amendments should be addressed in BoS and BoF	BoS&BoF meetings are proposed and scheduled Curriculum changes are made	FoE implemented the CBCS syllabus from 2019-20 as per vide circular number Ref: - TMU/CCSIT/CRC/19-20/odd/02
2	Short term Job oriented industry collaborative programs need to be enhanced	Add more Job oriented Industry collaboration and short-term courses	Short term job oriented industry collaborative programs are identified and implementation is in process.
3	All stake holders feedback is required and adequate changes must be incorporated in curriculum.	Online/offline feedback proforma has been developed and process to be filled by all stake holders	Feedback data collection is completed. Analyzed all the feedback received from various stake holders
4	Include outreach learning resources in Teaching-Learning process	Faculty & students are enrolled in NPTEL courses	Faculty & students have successfully completed the NPTEL Course
5	Scholarship based PhD is need to be promoted	TMU made a policy for the internal scholarship in PhD	Policy implemented

Table 7.2.4 : Academic Audit Report (Assessment Period : 2019- 2020 (Even Sem))

S. No.	Observation by the Peer Team	Action Item	Action Taken
1	All curriculum amendments should be addressed in BoS and BoF	BoS&BoF meetings are Scheduled. Curriculum changes are made.	FoE implemented the CBCS syllabus from 2019-20 Ref: - TMU/CCSIT/CRC/19-20/even/03 Ref: TMU/CC SIT/CRC/I 9-20 thvent 13
2	Teaching-Learning process: faculty members should develop e-contents.	Every faculty members should create e-contents in the form of lecture notes pdf, ppt, videos. Faculty member should deliver his/her lectures through online platform	e-modules for all courses have been developed and uploaded on university website. Faculty members have scheduled his/her lectures through Olympus Great Learning online platform
3	Apply for the projects to the government funding agency	Niti Ayog registration is required	Registration done in Niti Ayog. Few projects are submitted in government agency
4	ARC recommended to conduct the examination on online platform	Due to covid-19 pandemic, Exam should be conducted through online platform	College planned all the examination through wheebox online portal

Table 7.2.5 : Academic Audit Report (Assessment Period : 2020- 2021 (Odd Sem))

S.No.	Observation by the Peer Team	Action Item	Action Taken

1	Orientation/Induction Program should be planned for new admitted students.	Orientation/Induction Program has been planed as per AICTE guidelines.	Successfully conducted two-weeks induction program
2	Need to properly maintain the digital record feedback on syllabus.	Created google form for the same	Analyzed and necessary action has been implemented.
3	Organize Industry-immersion programme for faculty improvement	Industry linkages need to be identified Short term and long-term programs collaborations in industry is required	MoU are signed with Industry but due to Covid 19, Physical training was restricted. However, active online training modules are received from google, IBM, AICTE and DST
4	Students Projects quality attributes must be modified	To improve the quality of project work, students are to bring out a publication in peer reviewed journal/ conference proceedings.	To improve the quality of project work a component for 5 marks related to peer reviewed journal and conference proceedings has been included.
5	Enhance the revenue generated from consultancy.	Few companies/organizations are in pipeline for the further process	A consultancy component has been made as part of performance management system (PMS) - Consultancy of Rs.10 Lakh has been received from C L Gupta Moradabad.
6	Teaching-Learning: e contents should be uploaded on website.	Every faculty member need to create and uplaod e-contents on webportal, googlesite and other relevant platforms for ease of access of students.	All data has been uploaded on university website as well as sent for UP digital Library
7	In covid situation find the alternative to the Lab practical sessions.	Faculty members are required to xplore the ways of conducting Virtual Lab.	Entered into an MoU with IIT Kanpur and IIT Mumbai (Spoken Tutorial) for virtual Lab.The practical sessions of all virtual Labs are implemented.

7.3 Improvement in Placement, Higher Studies and Entrepreneurship (10)

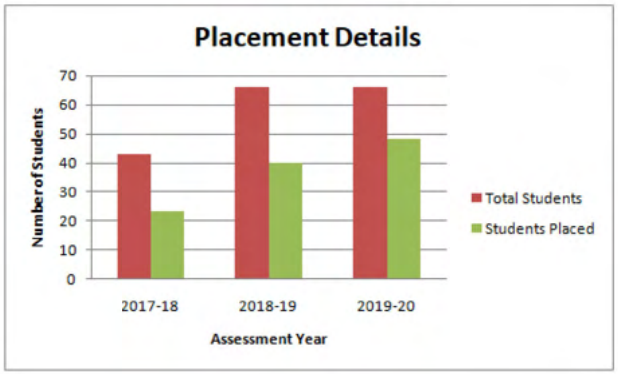
Total Marks 10.00

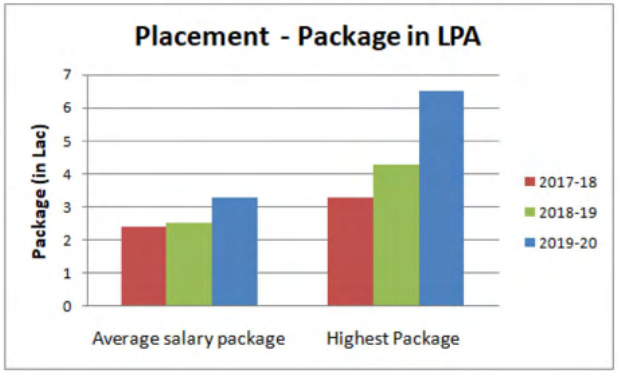
Institute Marks : 10.00

7.3.1 Placements

Table 7.3.1 Placement: number, quality placement, core industry, pay packages etc.

Session	Total Students	Students Placed	Percentage	Average salary package (Lacs.)	Highest Package (Lacs.)	Improvement in Placement Percentage
2017-18	43	23	53.48%	2.41	3.3	438%
2018-19	66	40	60.6%	2.53	4.3	113%
2019-20	66	48	72.72%	3.29	6.5	120%





7.3.2 Higher studies

Table 7.3.2 Performance in GATE, GRE, GMAT, CAT etc.

S No	Name of Students	Enrolment No	Marks Obtained	Gate Score	Branch	Year
1	Swapnil Jain	TCA1409072	53.67	643	Computer Science & Information Technology (CS)	2019-20
2	Priyanshi Jain	TCA1609081	33.33	406	Computer Science & Information Technology (CS)	2019-20
3	Ayush Jain	TCA1609030	33	402	Computer Science & Information Technology (CS)	2019-20
4	Mohd Aamir	TCA1609062	34.33	418	Computer Science & Information Technology (CS)	2019-20
5	Priyansh Jain	TCA1709107	41.34	535	Computer Science & Information Technology (CS)	2020-21
6	Yash Gandhi	TCA1709178	28.65	381	Computer Science & Information Technology (CS)	2020-21
7	Rishi Bajj	TCA1709117	27.41	366	Computer Science & Information Technology (CS)	2020-21
8	Praveen Kumar Jain	TCA1709123	27.7		Computer Science & Information Technology (CS)	2020-21
9	Uday Jain	TCA1809057	28.97	385	Computer Science & Information Technology (CS)	2020-21
10	Pushpane Singh Chaudhary	TCA1811005	27.77	370	Computer Science & Information Technology (CS)	2020-21

Table 7.3.3 Details of Student for Higher Studies

S No	Name	Enrolment NO	Program of Study	Institute	Year
1	Arshi Fariya	TCA1511001	M.Tech(ISFC)	School of Engineering Science, Jamia Hamdard, New Delhi	2018-19
2	Sheenam Naaz	TCA1511008	M.Tech(ISFC)	School of Engineering Science, Jamia Hamdard, New Delhi	2018-19
3	Swapnil Jain	TCA1409072	M.Tech	IIIT, Bangalore	2019-20
4	Kumar Shree Harsh	TCA1509041	M.Tech	BITS, Pilani	2019-20
5	Hemant Jain	TCA1509030	M.Tech	BITS, Pilani	2019-20

7.3.3 Entrepreneurs

Table 7.3.4 Details of Entrepreneurs

S. No	Name	Enrollment No.	Legal Name	Trade Name	Registration Date	GST Number :	Operation/ Domain
1	Raghu Jain	TCA1509061	Raghu Computers Pvt Ltd	Raghu Computers Pvt Ltd	2018	09AAHCR0960L1Z0	Information Technology
2	Mohd. Shahzaman Ansari	TCA1611006	Shama Anjum	Shah Fashion	2020	09BIGPA3382L2Z2	Fashion Technology

Glimpses of Placements:










NETWORK BULLS
VISHAL
MEGA
MART



7.4 Improvement in the quality of students admitted to the program (20)

Total Marks 20.00

Institute Marks : 20.00

Item		2020-21	2019-20	2018-19
National Level Entrance Examination	No of students admitted	0	0	0
	Opening Score/Rank	0	0	0
NA	Closing Score/Rank	0	0	0
State/ University/ Level Entrance Examination/ Others	No of students admitted	0	0	0
	Opening Score/Rank	0	0	0
NA	Closing Score/Rank	0	0	0
Name of the Entrance Examination for Lateral Entry or lateral entry details	No of students admitted	0	0	0
	Opening Score/Rank	0	0	0
NA	Closing Score/Rank	0	0	0
Average CBSE/Any other board result of admitted students(Physics, Chemistry&Maths)		72.47	69.07	66.24

8 FIRST YEAR ACADEMICS (50)

Total Marks 47.32

8.1 First Year Student-Faculty Ratio (FYSFR) (5)

Total Marks 5.00

Institute Marks : 5.00

Name of Faculty	PAN No.	Qualification	Date of Receiving Highest Degree	Designation	Date of joining	Teaching Load (%)	Currently Associated (Y/N)	Nature of Association (Regular/Contract)
Dr Ajay Upadhyay	ABXPU8353L	Ph.D	17/11/2007	Associate Professor	02/09/2013	100	Yes	Regular
Mr. Neeraj Kaushik	BLAPK6840A	M.Tech	28/11/2015	Assistant Professor	12/04/2010	100	Yes	Regular
Dr. Sandeep Verma	AEQPV2030P	Ph.D	12/12/2003	Associate Professor	01/08/2013	100	Yes	Regular
Mr. Sunil Kumar	CQYPK7325Q	M.Tech	01/09/2015	Assistant Professor	10/07/2015	100	Yes	Regular
Dr. Asim Ahmad	AEEPA5184R	Ph.D	20/09/1983	Professor	01/07/2016	100	Yes	Regular
Ms. Indu Tripathi	AHWPT7270Q	M.Phil	22/04/2010	Assistant Professor	14/09/2010	100	Yes	Regular
Dr. Alok Gahlot	ATAPG5212B	Ph.D	01/08/2011	Assistant Professor	04/02/2013	100	Yes	Regular

Please provide First year faculty information considering load

Name of the faculty member	PAN No.	Qualification	Date of Receiving Highest Degree	Area of Specialization	Designation	Date of joining	Teaching load (%)			Currently Associated (Yes / No)	Nature Of Association (Regular / Contract)	Date Of leaving(In case Currently Associated is 'No')
							CAY	CAYm1	CAYm2			
Dr. Vipin Kuma	BUUPK8871L	M.Sc. and PhD	10/11/2014	OERATION RESEARCH	Assistant Professor	17/09/2010	100	100	100	Yes	Regular	
Dr. AMIT KUM/	BKNPS2277K	M.Sc. and PhD	26/10/2012	BIO PHYSICS	Associate Professor	16/08/2013	100	100	100	Yes	Regular	
Dr. VARUN KU	BYSPS8008R	M.Sc. and PhD	17/10/2011	In ORGANIC CHEMISTRY	Associate Professor	16/07/2013	100	100	100	Yes	Regular	
Dr. PANKAJ G(	ALMPG4563F	ME/M. Tech and PhD	23/02/2019	ANTEENA MICROWAVE	Associate Professor	29/07/2019	100	100	100	Yes	Regular	
Dr. Garima Go:	AYKPS2921C	ME/M. Tech and PhD	23/02/2019	Power Quality	Associate Professor	29/07/2019	100	100	100	Yes	Regular	
Dr. Ajit Kumar	CNRPK2501E	M.Sc. & PhD	24/08/2012	Fluid Dynamics	Associate Professor	24/08/2012	100	100	100	Yes	Regular	
Ms. Neha Anar	BNMPA4604G	M.Phil	27/06/2014	English Communication	Assistant Professor	17/09/2012	100	100	100	Yes	Regular	
Mr. Pradeep K(	ANEPV4739L	M.E/M.Tech	08/06/2016	Power System	Assistant Professor	02/08/2010	100	100	100	Yes	Regular	
Ms. Sakshi Sin	DBWPS8657B	M.E/M.Tech	13/08/2014	Microwave	Assistant Professor	15/03/2011	100	100	100	Yes	Regular	
Dr. Parag Agarwal	BLHPA9206P	Ph.D	23/11/2013	Condensed Matter Physics	Associate Professor	10/02/2017	100	100	100	Yes	Regular	
Mr. Arun Gupta	ASEPG5786D	M.E/M.Tech	17/06/2019	CAD	Assistant Professor	19/07/2014	100	100	100	Yes	Regular	

Year	Number Of Students(approved intake strength) N	Number of Faculty members(considering fractional load) F	FYSFR (N/F)	*Assessment=(5*20)/FYSFR(Limited to Max.5)
2018-19(CAYm2)	300	16	18.75	5
2019-20(CAYm1)	300	16	18.75	5
2020-21(CAY)	300	18	16.67	5
Average				5

AverageFYSFR: 18

Assessment [(5 * 15) / AverageFYSFR]: 5.00

8.2 Qualification of Faculty Teaching First Year Common Courses (5) Total Marks 5.00

Institute Marks : 5.00

Year	x (Number Of Regular Faculty with Ph.D)	y (Number Of Regular Faculty with Post graduate Qualification)	RF (Number Of Faculty Members required as per SFR of 20:1)	Assessment Of Faculty Qualification [(5x + 3y) / RF]
2018-19	9	7	15	4.4
2019-20	9	7	15	4.4
2020-21	11	7	15	5.07

Average Assessment: 4.62

8.3 First Year Academic Performance (10)

Total Marks 7.32

Institute Marks : 7.32

Academic Performance	CAYm1(2019-20)	CAYm2(2018-19)	CAYm3 (2017-18)
Mean of CGPA or mean percentage of all successful students(X)	7.83	7.41	7.49
Total Number of successful students(Y)	56.00	60.00	58.00
Total Number of students appeared in the examination(Z)	60.00	60.00	60.00
API [X*(Y/Z)]	7.31	7.41	7.24

Average API[(AP1+AP2+AP3)/3] : 7.32

Assessment = Average API : 7.32

8.4 Attainment of Course Outcomes of first year courses (10)

Total Marks 10.00

8.4.1 Describe the assessment processes used to gather the data upon which the evaluation of Course Outcomes of first year is done (5)

Institute Marks : 5.00

Table 8.4.1 Direct CO Attainment Tools

	Weightage	Assessment Tools
Direct CO Attainment	100%	Theory CT's [I, II , III], Practical, Assignment
		End Term Examination

Table 8.4.2 Direct Assessment Process

Direct Assessment:			
Evaluation	**Internal**	**External**	**Total**
Theory	40	60	100
Practical/ Dissertations/ Project Reports/ Viva-Voce	50	50	100

Table 8.4.3 CO Assessment Tools

Direct	CO Assessment	Course Type	Assessment Tools	Minimum Frequency

		Theory	Internal Evaluation	CT's	Thrice per course
				Assignments	Once per course
			End Term Examination		Once per course
		Practical	Internal Evaluation	Continuous Lab Work	Once per week
				Internal lab exam	Once per course
			End Term Examination		Once per course
		English communication skills	Internal Evaluation	Presentation Skills / Viva–voce (Assignment)	Once per course
				Writing Skills (CT's)	
			End Term Examination	Writing Skills (Written Exam)	Once per course
				Viva– voce	Once per course

Table 8.4.4 Theory Evaluation Process (Internal)

Evaluation Theory Course Internal					
Class Test-1	**Class Test-2**	**Class Test-3**	**Assignment(s)**	**Attendance & Participation**	**Total**
Best two out of three					
10	10	10	10	10	40

Table 8.4.5 Practical Evaluation Process

Evaluation of practical course [Applied Course (First Year)]:

Internal Evaluation (50 marks)

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a 4-point scale which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

Evaluation scheme:

PRACTICAL PERFORMANCE & VIVA DURING THE SEMESTER (35 MARKS)				ON THE DAY OF EXAM (15 MARKS)		TOTAL INTERNAL (50 MARKS)
EXPERIMENT (5 MARKS)	FILE WORK (10 MARKS)	VIVA (10 MARKS)	ATTENDANCE (10 MARKS)	EXPERIMENT (5 MARKS)	VIVA (10 MARKS)	

External Evaluation (50 marks)

The external evaluation would also be done by the external Examiner based on the experiment conducted during the examination.

EXPERIMENT (20 MARKS)	FILE WORK (10 MARKS)	VIVA (20 MARKS)	TOTAL EXTERNAL (50 MARKS)

Table 8.4.6 Practical Evaluation Process (Computer Courses)

Evaluation of practical course [For Computer Course]

Practical Courses Internal Evaluation (50 marks)

EXPERIMENT (30 MARKS)	ATTENDANCE (10 MARKS)	VIVA (10 MARKS)	TOTAL INTERNAL (50 MARKS)

Practical Courses External Evaluation (50 marks)

The external evaluation would also be done by the External Examiner based on the experiment performed during the examination.

EXPERIMENT (30 MARKS)	FILE WORK (10 MARKS)	VIVA (10 MARKS)	TOTAL EXTERNAL (50 MARKS)

8.4.2 Record the attainment of Course Outcomes of all first year courses (5)

Institute Marks : 5.00

The process to assess the attainment of the Program Outcomes and Program Specific Outcomes begins with the assessments of course outcomes attainment. The detailed process for assessment of COs attainment has been explained in section 3.2.1. The assessment of POs /PSOs during first year involves direct methods of assessment only. POs/PSOs attainment Assessment method Assessment Tool Frequency Direct Method Course Outcome.

Attainment Level:

3- If 70% or more students have scored>= Threshold Value(Substantial Attainment)
2- If 60% to 69% students have scored>= Threshold Value(Moderate Attainment)
1- If 50% to 59% students have scored>= Threshold Value(Low Attainment)
0- If 49% or less students have scored >= Threshold Value(No Attainment)

Table 8.4.2.1 : Attainment of Course Outcomes for A.Y.2019-20

Course Code	Course Name	Individual Attainment of CO in %					CO Attainment Levels					Target Attainment (Y/N)				
		CO1	CO2	CO3	CO4	CO5	CO1	CO2	CO3	CO4	CO5	CO1	CO2	CO3	CO4	CO5
EAS116	Engineering Mathematics-I	98	95	97	97	96	3	3	3	3	3	Y	Y	Y	Y	Y
EAS112	Engineering Physics	97	95	93	99	97	3	3	3	3	3	Y	Y	Y	Y	Y
EAS162	Engineering Physics (Lab)	95	96.67	95	96.67	96.67	3	3	3	3	3	Y	Y	Y	Y	Y
EAS211	Engineering Mathematics-II	98	85	92	100	97	3	3	3	3	3	Y	Y	Y	Y	Y
EAS213	Engineering Chemistry	93	88	81	96	91	3	3	3	3	3	Y	Y	Y	Y	Y
EAS263	Engineering Chemistry (Lab)	96.67	98.33	98.33	100	100	3	3	3	3	3	Y	Y	Y	Y	Y
ECS201	Computer Basics & C Programming	98	94	97	99	99	3	3	3	3	3	Y	Y	Y	Y	Y
ECS251	Computer Basics & C Programming (Lab)	98.33	98	98	98	98	3	3	3	3	3	Y	Y	Y	Y	Y
EEC111	Basic Electronics Engineering	51.67	61.67	33.33	46.67	25	1	2	0	0	0	Y	Y	N	N	N
EEC161	Basic Electronics Engineering (Lab)	100	100	98	100	100	3	3	3	3	3	Y	Y	Y	Y	Y
EEE217	Basic Electrical Engineering	96	87	91	84	71	3	3	3	3	3	Y	Y	Y	Y	Y
EEE261	Basic Electrical Engineering (Lab)	93	100	90	78	76.67	3	3	3	3	3	Y	Y	Y	Y	Y
EME162	Workshop Practice (Lab)	96.67	100	98.33	91.67	88.33	3	3	3	3	3	Y	Y	Y	Y	Y
EME261	Engineering Drawing (Lab)	96.67	96.67	96.67	86.67	60	3	3	3	3	1	Y	Y	Y	Y	Y
TMU101	Environmental Studies	62	85	65	85	72	2	3	2	3	3	Y	Y	Y	Y	Y
TMUGE101	English Communication–I	95	96.67	100	96.67	80	3	3	3	3	3	Y	Y	Y	Y	Y

TMUGE201	English Communication–II	100	88	100	100	88	3	3	3	3	3	Y	Y	Y	Y	Y

Table 8.4.2.2 : Attainment of Course Outcomes for A.Y.2018-19

Course Code	Course Name	Individual Attainment of CO in %					CO Attainment Levels					Target Attainment (Y/N)				
		CO1	CO2	CO3	CO4	CO5	CO1	CO2	CO3	CO4	CO5	CO1	CO2	CO3	CO4	CO5
EAS116	Engineering Mathematics-I	71.67	70	60	55	63.33	3	2	1	1	2	Y	Y	Y	Y	Y
EAS112	Engineering Physics	51.67	55	48.33	46.67	51.67	1	1	0	0	1	Y	Y	N	N	Y
EAS162	Engineering Physics (Lab)	100	100	100	100	100	3	3	3	3	3	Y	Y	Y	Y	Y
EAS211	Engineering Mathematics-II	57	57	57	**53**	55	1	1	1	1	1	Y	Y	Y	Y	Y
EAS213	Engineering Chemistry	58.33	63.33	40	50	51.67	1	2	0	0	1	Y	Y	N	N	Y
EAS263	Engineering Chemistry (Lab)	85	85	85	85	85	3	3	3	3	3	Y	Y	Y	Y	Y
ECS201	Computer Basics & C Programming	60	56.67	53.33	46.67	51.67	1	1	1	0	1	Y	Y	Y	N	Y
ECS251	Computer Basics & C Programming (Lab)	97	98	97	97	97	3	3	3	3	3	Y	Y	Y	Y	Y
EEC211	Basic Electronics Engineering	60.75	67.5	73.5	60.5	55.75	2	2	3	2	1	Y	Y	Y	Y	Y
EEC261	Basic Electronics Engineering (Lab)	100	100	100	100	100	3	3	3	3	3	Y	Y	Y	Y	Y
EEE117	Basic Electrical Engineering	87.66	86.5	72.5	76.66	52.5	3	3	3	3	1	Y	Y	Y	Y	Y
EEE161	Basic Electrical Engineering (Lab)	100	100	100	100	100	3	3	3	3	3	Y	Y	Y	Y	Y
EME162	Workshop Practice (Lab)	97	97	98	97	96	3	3	3	3	3	Y	Y	Y	Y	Y
EME261	Engineering Drawing (Lab)	95	95	95	95	95	3	3	3	3	3	Y	Y	Y	Y	Y
TMU101	Environmental Studies	73.33	75	66.67	70	46.67	3	3	2	2	0	Y	Y	Y	Y	N
EHM199	English Communication & Soft Skills I	100	100	100	100	100	3	3	3	3	3	Y	Y	Y	Y	Y
EHM249	English Communication & Soft Skills II	96.6	98.3	94.8	91.4	46.6	3	3	3	3	0	Y	Y	Y	Y	N

Table 8.4.2.3 : Attainment of Course Outcomes for A.Y.2017-18

Course Code	Course Name	Individual Attainment of CO in %					CO Attainment Levels					Target Attainment (Y/N)				
		CO1	CO2	CO3	CO4	CO5	CO1	CO2	CO3	CO4	CO5	CO1	CO2	CO3	CO4	CO5
EAS116	Engineering Mathematics-I	85	85	80	77	57	3	3	3	3	1	Y	Y	Y	Y	Y
EAS212	Engineering Physics	72	72	74	72	80	3	3	3	3	3	Y	Y	Y	Y	Y
EAS112	Engineering Physics	77	77	66	55	44	3	3	2	1	0	Y	Y	Y	Y	N
EAS162	Engineering Physics (Lab)	100	100	100	100	100	3	3	3	3	3	Y	Y	Y	Y	Y
EAS262	Engineering Physics (Lab)	96	96	96	96	96	3	3	3	3	3	Y	Y	Y	Y	Y
EAS211	Engineering Mathematics-II	97	84	93	**99**	97	3	3	3	3	3	Y	Y	Y	Y	Y

EAS113	Engineering Chemistry	72	82	64	66	66	3	3	2	2	2	Y	Y	Y	Y	Y
EAS213	Engineering Chemistry	88	88	66	66	66	3	3	2	2	2	Y	Y	Y	Y	Y
EAS163	Engineering Chemistry (Lab)	98	100	100	100	100	3	3	3	3	3	Y	Y	Y	Y	Y
EAS263	Engineering Chemistry (Lab)	100	100	100	100	100	3	3	3	3	3	Y	Y	Y	Y	Y
ECS201	Computer Basics & C Programming	66	63	70	71	45	2	2	2	3	0	Y	Y	Y	Y	N
ECS251	Computer Basics & C Programming (Lab)	97	97	97	97	97	3	3	3	3	3	Y	Y	Y	Y	Y
EEC211	Basic Electronics Engineering	63	63	71	68	63	2	2	3	2	2	Y	Y	Y	Y	Y
EEC261	Basic Electronics Engineering (Lab)	98	98	98	98	98	3	3	3	3	3	Y	Y	Y	Y	Y
EEE117	Basic Electrical Engineering	58	56	71	71	70	1	1	3	3	2	Y	Y	Y	Y	Y
EEE161	Basic Electrical Engineering (Lab)	100	100	100	100	100	3	3	3	3	3	Y	Y	Y	Y	Y
EME162	Workshop Practice (Lab)	95	95	95	95	95	3	3	3	3	3	Y	Y	Y	Y	Y
EME2619*	Engineering Drawing (Lab)	85	85	85	85	85	3	3	3	3	3	Y	Y	Y	Y	Y
EAS115	Environmental Studies	66	70	75	76	76	2	2	3	3	3	Y	Y	Y	Y	Y
EHM199	English Communication & Soft Skills I	91.2	91.6	92.3	89.6	41.4	3	3	3	3	0	Y	Y	Y	Y	N
EHM249	English Communication & Soft Skills II	90	90	91.7	88.3	30.0	3	3	3	3	0	Y	Y	Y	Y	N

8.5 Attainment of Program Outcomes from first year courses (20) Total Marks 20.00

8.5.1 Indicate results of evaluation of each relevant PO and/or PSO if applicable (10) Institute Marks : 10.00

POs Attainment:

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EAS11	2.3	2.8	2.0	2.0	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2.0
EAS11	1.6	1.4	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1.4
EEC11	0.6	0.6	0.4	0.6	PO5	PO6	PO7	0.4	PO9	PO10	PO11	0.4
TMU1(	PO1	PO2	PO3	PO4	PO5	1.73	2.6	PO8	PO9	PO10	PO11	PO12
TMUG	PO1	PO2	PO3	PO4	PO5	2.6	1.4	3.0	2.6	3.0	PO11	2.4
EAS16	3.0	3.0	1.0	1.6	PO5	PO6	PO7	1.4	PO9	PO10	PO11	3.0
EEC16	2.8	2.8	2.0	3.0	PO5	PO6	PO7	2.0	PO9	PO10	PO11	2.0
EME16	2.2	1.4	2.3	PO4	2.0	PO6	PO7	PO8	3.0	2.0	PO11	3.0
EAS21	2.8	2.4	2.8	2.0	PO5	1.0	PO7	PO8	PO9	PO10	PO11	2.7
EAS21	2.4	2.4	2.4	1.7	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2.0
EEE21	2.5	3.0	3.0	2.0	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1.0
ECS20	3.0	2.0	1.5	2.0	1.0	PO6	PO7	PO8	PO9	PO10	PO11	3.0
TMUG	PO1	PO2	PO3	PO4	PO5	2.2	1.4	3.0	2.6	3.0	PO11	2.4
EAS26	2.2	2.2	2.4	2.0	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2.0
EEE26	2.5	2.6	2.7	2.0	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2.0
ECS25	2.8	3.0	2.0	1.8	1.0	PO6	PO7	1.0	1.0	1.0	1.0	3.0
EME26	1.87	2.8	2.1	2.8	1.87	1.12	PO7	2.8	2.33	1.87	0.93	1.87

PO Attainment Level

PSOs Attainment:

Course	PSO1	PSO2	PSO3
EAS11	2.0	PSO2	1.0
EAS11	1.0	1.0	PSO3
EEC11	0.6	0.6	PSO3
TMU1(	PSO1	PSO2	1.39
TMUG	PSO1	PSO2	3.0
EAS16	PSO1	1.0	1.0
EEC16	3.0	3.0	PSO3
EME16	PSO1	PSO2	PSO3
EAS21	1.0	PSO2	1.0
EAS21	PSO1	2.0	PSO3
EEE21	PSO1	1.7	PSO3
ECS2(	1.8	1.67	1.0
TMUG	PSO1	PSO2	3.0
EAS26	PSO1	2.0	PSO3
EEE26	PSO1	2.0	PSO3
ECS25	2.8	2.2	3.0
EME26	PSO1	1.87	PSO3

PSO Attainment Level

Course	PO1	PO2	PO3
Direct Attainment	1.74	1.73	1.80
PSO Attainment	1.74	1.73	1.80

8.5.2 Actions taken based on the results of evaluation of relevant POs and PSOs (10) Institute Marks : 10.00

POs Attainment Levels and Actions for Improvement- (2019-20)

POs	Target Level	Attainment Level	Observations
PO 1 : Engineering Knowledge			
PO 1	1.80	2.33	1. Target significantly achieved. 2. The courses having the further scope of improvement are EEC111 & TMU101.
• In EEC111 question bank based on numeral's and extra study material were provided to students in addition to extra classes. • In TMU101 students were given written assignments related to basic and fundamental concepts			

PO 2 : Problem Analysis

PO 2	1.80	2.31	1. Target significantly achieved. 2. The courses having scope for further improvement are EAS112 , EEC111, & EME162.
• In Engineering Physics(EAS112) Assignment was given to students understand the basic and advanced concepts & to solve numerical problems. • In Electronics Engineering(EEC111) question bank with descriptive and MCQ type were given to develop better understanding. • In Workshop Lab (EME 162) extra experiments were conducted to develop the required practical skills among students.			

PO 3 : Design/development of Solutions

PO 3	1.80	2.05	1. Target significantly achieved. 2. The courses having scope for further improvement are EEC 111 & EAS 162.
• In EEC111 faculty members were advised to give quizzes, assignment and conduct extra classes to enhance the basic concepts of the subject • In EAS162, unit wise extra study materials and tutorial's were given to improve the understanding level of the students in the difficult topics			

PO 4 : Conduct Investigations of Complex Problems

PO 4	1.80	1.96	1. Target significantly achieved. 2. The courses having scope for further improvement are TMUGE101 & EAS112.
• In Physics EAS112 handouts, extra classes, video lectures by using smart board were conducted. • In TMU GE 101 study materials relevant to communication and soft skill seminars were conducted to improve the English communication skill of the students.			

PO 5 : Modern Tool Usage

PO 5	1.80	1.47	1. Target missed. 2. The courses having scope for further improvement are ECS201, EEE261, ECS251, & EME261. • Application of software tools are difficult and needs more concentration. • In EEE261 (1.80) DC Network Theorem's require's implementation through modern electronic tools understanding.
• In lab courses software tools and their simulators are provided to develop better understanding of these tools. • In lab course software manuals are provided for better understanding In EEE261, extra lab hours were provided for better understanding of practical concepts behind the DC Network Theorem's.			

PO 6 : The Engineer and Society

PO 6	1.80	1.73	1. Target marginally missed. 2. The courses having scope for further improvement are TMU101, TMUGE101, TMUGE201, & EME261. • TMU-GE101 & TMUGE201 are less relevant in engineering domain. • In TMU 101 understanding of social implication is complex
• In TMUGE101 and TMUGE201 students were provided with extra study materials on English language to develop their proficiency and communication skills. • In English language classes, students encouraged to make all the discussions in English. • In TMU101, students were motivated to give presentation on their surrounding environment and issues.			

PO 7 : Environment and Sustainability

PO 7	1.80	1.80	1. Target achieved. 2. The courses having scope for further improvement are TMU101 & EME261.
• In TMU101 students were provided with extra study material and assignments in such a way so as to understand societal and environment issues in a better manner. • In EME 261 students were motivated to do discussion on various topics to have gist of current scenario of the environment.			

PO 8 : Ethics

PO 8	1.80	1.94	1. Target achieved. 2. The courses having scope for further improvement are EAS 262 & EEE261.
• In EAS262 students were made to learn concepts in virtual mode using simulators to enhance their overall understanding. • In EEE261 students were given extra lab sessions to improve the shortcomings. • The events and International Conferences were organized to inculcate the society and ethical values among the students.			

PO 9 : Individual and Team Work

PO 9	1.80	2.31	1. Target significantly achieved. 2. The courses having scope for further improvement are EAS162 & EAS 211.
• Club activities were conducted to create individual and team work skills among students. • Students were motivated to organize cultural and technical talks to improve team work skills among students. • In EAS 162 and EAS 211 extra classes and handouts were given to weaker students, so that they can apply their knowledge for the benefit of society.			

PO 10 : Communication

PO 10	1.80	2.17	1. Target significantly achieved. 2. The courses having scope for further improvement are EAS162 & ECS201
• In EAS162 students were given exercises to test their writing as well as speaking skills in order to improve their overall subject understanding. • In ECS201 students were also motivated to improve their vocabulary to design better documents. The weaker students were provided extra classes to apply their subject knowledge. • The soft skill seminar was conducted to increase the communication skill of the students			

PO 11 : Project Management and Finance

PO 11	1.80	0.96	1. Target missed. 2. No course in the first year is mapped with this PO. 3. The courses having scope for further improvement are EAS112 & EAS162.
• The faculty members were asked to conduct extra classes, give challenging assignment and quiz questions to understand the basic concepts in EAS112 & in EAS162 • Students were provided internship in MNC's to do live software project to understand the basics of project management and finance.			

PO 12 : Life-long Learning

PO 12	1.80	2.14	1. Target significantly achieved. 2. The courses having scope for further improvement are TMU101 & EEC111
• In TMU101 a large emphasis was laid on using English as medium of communication amongst the students to develop a life-long learning process. • In EEC111 students were motivated to learn basic concepts of the course and extra classes were conducted for weaker students.			

PSOs Attainment Levels and Actions for Improvement- (2019-20)

PSOs	Target Level	Attainment Level	Observations
PSO 1 : Developing skills for creating computational solutions with emerging technologies, programming languages, mathematical foundations, algorithmic principles and open source platforms to solve complex engineering problems.			
PSO 1	1.80	1.74	1. Target missed. 2. The courses having scope for further improvement are EAS112, EEC111, & EAS211. 3. The courses listed in point 2 are less relevant with PSO1.
• In Engineering mathematics, extra assignments for practice on developing skills for creating computational solutions, with mathematical foundation, are provided. • In EEC111 and EAS112, students were motivated to use open source platform and solve complex engineering problems.			
PSO 2 : Ability to understand the evolutionary changes in computing by applying standard practices and skills acquired through computer engineering to provide solutions with innovative ideas and interdisciplinary research.			
PSO 2	1.80	1.73	1. Target missed. 2. The courses having scope for further improvement are EAS162 & EEE217.
• In EAS162 and EEE217 students were motivated to use simulation softwares to provide solutions with innovative ideas and interdisciplinary knowledge.			
PSO 3 : Ability to employ modern computer languages, environments, and platforms in creating innovative career paths to be an entrepreneur, and pursue higher studies in their respective domains.			
PSO 3	1.80	1.80	1. Target is marginally achieved. 2. The courses having scope for further scope of improvement are EAS112 & EEC112
• In EAS112 practice tests were conducted to monitor and enhance the subject understanding of the students. • In EEC 112 Extra classes were conducted to develop awareness among the students and help them to link with the difficult concept of the course			

9 STUDENT SUPPORT SYSTEMS (50)

Total Marks 50.00

9.1 Mentoring system to help at individual level (5)

Total Marks 5.00

Institute Marks : 5.00

9.1 Mentoring system to help at individual level

The mentor bridges the communication gap between parents and management by regularly updating the parents about the student's progress as well as updates from the college. Effective mentoring seeks to establish a trustworthy relationship between Mentees and Mentor that Focuses on:

- The need of the student.
- The establishment of consistent communication with parent to closely monitor the growth of student.
- The responsible and friendly mentorship with hard work and strong passion.

The student's personal details along with their academic performance and progress are updated in Student Mentorship Booklet maintained by the mentor. Counseling is provided on the following parameters:

Table 9.1 : Counselling Parameters

S. No.	Type of mentoring system	Functions
1	**Academic Guidance**	• Motivating students to excel in academics. • Encouraging them to understand the essence of academics in real life application. • Contemplating strategies for their contribution in services to mankind. • Framing career path to accomplish their targets. • Making them aware of the overall design of curriculum and outcomes of each course.
2	**Professional guidance**	• Motivating students to expand their domain knowledge base for participating in technical and professional competitions. • Stimulating them to exhibit innovation in projects. • Encouraging them to present their ideas through paper presentation in conferences. • Encouraging and guiding them to register themselves in the professional bodies like IEEE, CSI, ISTE, etc. (Our 28 students have the membership of IEEE and 05 students are associated with CSI) • Creating awareness in them and enhancing the knowledge about the various activities including research in their area of specialization.
3	**Career advancement**	• Training students for appearing in competitive exams like GATE, NET, UPSC, etc. • Encouraging them for career related certification courses to add value to their qualifications. • Providing them career guidance and workshops apart from soft skills training given by Centre for Career Counseling and Employment (CCCE*) and Centre for Teaching Learning and Development (CTLD**). • Assisting them for online certification courses offered by MOOCs to strengthen the qualification for their academic progression. • Arranging value added training programs to enhance their placement opportunities as well as to support their research in Academics/industry. • Encouraging them for international professional certification from CISCO, Microsoft, Java, etc. • Providing them department level short term courses in technologies like CISCO, Microsoft, Java, etc. to enhance their technical skills. • Conducting Guest Lectures, Seminars, etc. by Industry Experts.
4	**Academic Performance Improvement**	• Mentor analyzes students' academic performance after their Class Tests and motivates for improvement. • Students with good performance are encouraged to achieve next higher level of performance and slow learners are motivated & guided to improve the performance. • Students having low attendance are encouraged to attend their classes regularly for better understanding of the courses. • Information of academic planners, academic schedules and e-learning resources are shared to enhance their knowledge. • Identify academically weaker students and provide them additional reading materials, model questions along with solutions as well as remedial classes. • Students are encouraged to give seminar on the course topics to improve their technical communication and presentation.

5	**Laboratory specific**	• The students are regularly counseled to attend laboratory classes and carry out experiments successfully to score high in continuous evaluation. • At the end of the lab, the students take signature of the course faculty on record sheets. • The students are advised to complete the remaining experiments, if any, after taking the schedule from laboratory in-charge. • Faculty members provide the assignment/lab problem to students for lab-based solutions. • Students who are absent in the previous lab are considered and instructed to complete their pending experiments in extra time. • Students are encouraged for poster presentation on the mini-projects and involve in project-based collaborative learning.
6	**All-round development**	• To encourage the student to learn team work, leadership and motivate them to participate in sports and cultural activities time to time. • To create ethical and moral awareness. • Support the students to strengthen their interpersonal relationships, improve their academic progress, involvement in sports, extra-curricular activities, career advancement courses and soft skill improvements. • Encourage & motivate the students to participate in social as well as environmental awareness activities, National Service Scheme (NSS) and Blood donation camps. • Mentors provide psychological support to the students in recognizing the rigors of education thereby building self-esteem and confidence. • The students are encouraged to participate in literary, cultural activities and yoga/meditation workshops. This helps students to widen their leadership qualities, decision making abilities and team spirit.

***Centre for Career Counseling and Employment (CCCE)**

- The university has full-fledged Centre for Career Counseling and Employment (CCCE) offering result-oriented services for building up commendable careers.
- The Centre for Career Counseling and Employment (CCCE) is responsible for industry-academia interaction, guest lectures, corporate training, seminars, and workshops for strengthening corporate relations which ultimately help students find good placements.
- The Centre also organizes career guidance and counseling programs for the students to enable them and also prepare them for technical knowledge & skills as demanded by the industry and to face interviews organized by companies.
- The placement–cell link: https://www.tmu.ac.in/tmu/about-placement-cell (https://www.tmu.ac.in/tmu/about-placement-cell)

****Centre for Teaching Learning and Development (CTLD)**

- Teerthanker Mahaveer University (TMU) introduced new training department which will develop essential basic aptitude skill set in students and faculty members, thus forming Centre for Teaching Learning and Development (CTLD).
- CTLD focuses on developing quantitative ability, reasoning ability, verbal ability and developing the personality of the students by encouraging and nurturing their soft skills, so as to be productive to meet the demands of the employers and preparing for the placement interview which will pave the way to their dream company.
- These training programmes also upgrade the students' social and professional skills which are required for their future workspace.
- Some of the trainers are specialized in soft, social, emotional skills while others are specialized in quantitative aptitude, reasoning ability and verbal ability along with good amount of experience in their field of specialization.
- The CTLD link: https://www.tmu.ac.in/tmu/centre-for-teaching-learning-and-development (https://www.tmu.ac.in/tmu/centre-for-teaching-learning-and-development)

*** Mentoring System:** Yes

Number of faculty mentors: All the faculty members of the Department

Number of students per mentor: 20

Frequency of meeting: Once in a month

*** Efficiency of mentoring / counseling system:**

The mentoring system adopted by the college is proven to be effective with respect to the following points:

- Improvement in students' attendance
- Improvement in students' academic performance/technical skills.
- Improvement in quality of their projects.

- Improvement in personality development of individual student.
- Enhances the scope for career advancement of each student.
- Proficiency in addressing the societal issues.

*** Student Mentoring Handbook**

This booklet is prepared for every mentee by the mentor. This consists of following information about the mentees.

- General Information about the students like name, enrollment no, address, contact details of parents. Academic information of class 10^{th} and 12^{th}.
- Mentoring details of all four meeting in a semester.
- CT marks analyzed after each test and identified the week and bright students.
- Results Analysis of all the semesters.
- Special achievement by students (Relative Grading)
- Record of Co-curricular &Extra-Curricular Activities
- Games & Sports participation
- Inter/Intra college Activities participation
- Placement Record
- Additional information of student

STUDENT MENTORING HANDBOOK



Figure 9.1 : Snapshot of Front Page of Student Mentoring Handbook

9.2 Feedback analysis and reward /corrective measures taken, if any (10)

Total Marks 10.00

Institute Marks : 10.00

9.2.1 Feedback Collected for all courses:

Yes

9.2.2 Feedback Collection Process

The teaching-learning system followed by any educational institution needs continuous refinement. To capacitate this process of continuous refinement, the institution has adopted a feedback system that takes suggestions from students of each program. This eventually helps to fine-tune the teaching-learning process and the curriculum. The institution follows a well-defined and formal feedback system. It has been identified as one of the important process in our Quality Management System.

9.2.3 Percentage of students who participated:

90-95%

9.2.4 Feedback analysis process

The success rate of an institution is education

- The feedback forms will be filled by each student for every course collected thorough online by HR office at the end of every semester.
- Feedback collected through student's evaluation form for all courses at least once a semester in a range of 5-point Likert scale.
- We have some set of parameters to analyze on the basis of courses
- On the basis of that overall rating conceived based on the student's feedback.
- On the basis of 4-point scale, we are making out student's feedback on teacher on the basis of the various attributes of the teachers and their teaching methodologies.
- On the basis of that overall rating conceived based on the feedback given by the students.
- Feedback analysis process framed by the instate covers various aspects such as delivery of lecture, depth of subject, audibility, interaction, punctuality etc.,
- Students' overall evaluation was collected by framing some set of questions based on teaching/Learning methodology.
- Corrective measures and action are taken by the HOD based on the feedback analysis with the individual faculty members involved.
- Faculty with good feedback are rewarded.

The entire process is executed in following three stages

- Feedback collection process
- Feedback analysis
- Corrective measures

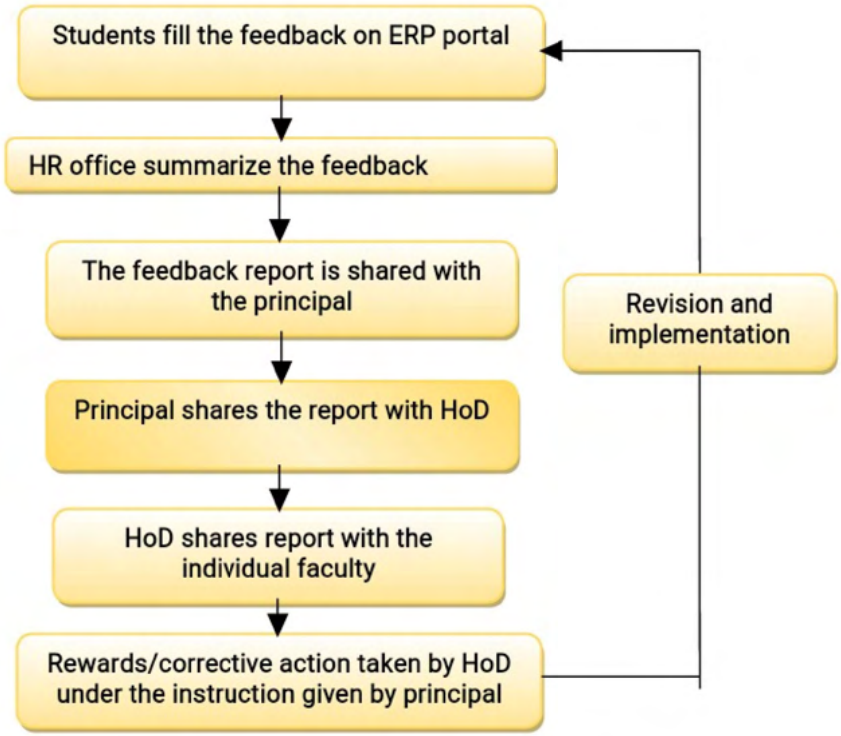


Figure 9.2 : Process of taking student feedback on teaching-learning

- **Feedback Collection Process**

Table 9.2 : Feedback Process

Title	Description
Feedback collection process	Faculty online feedback of their respective courses
Process	Online on ERP
Frequency of feedback Collection	Once in a semester
Metrics used for calculation	Scale 5-Excellent(E) Scale 4-Very good (VG) Scale 3-Good(G) Scale 2 –Average(A) Scale 1-Poor(P)

*** Feedback Analysis Process**

Summary of the feedback reports pertaining to course, program and teaching- learning is prepared, usually on the scale of 1 to 5. The minimum expected feedback for a faculty member from the students is 3 on 5-point scale rating system. The feedback is shared with head of department. Informal feedback is also taken directly by the heads from time to time during the ongoing semester. A special emphasis is paid on transparency and impact of the feedback system.

A broad range of parameters that are used for collecting the feedback data is as given below.

- Punctuality of Teacher
- Communication Skills
- Subject Knowledge
- Timely Coverage of Syllabus
- Syllabus coverage with relevant practical examples, case studies, presentation numerical and quiz
- Teacher's behavior in terms of impartiality, decency and focus on teaching
- Efficiency and confidence in handling class/queries
- Giving appropriate comments, suggestions while returning answer papers and assignments
- Encourage and assists, students to enhance knowledge skills and personality and taken keen interest in their mentoring
- Rating on considering the teacher as a role model

*** Rewards/Corrective Measures**

Based on the consolidated feedback analysis, the faculty members are appraised for their performance. The faculty members who follow innovative teaching pedagogies are appreciated and awarded along with the monitory benefit of increment, in recognition of their exemplary efforts for:

- Creativity (like unique assignment, e-contents & video lectures)
- Innovations in bringing about the change in students' learning (Field project, Live project, Research paper from respective project)
- Projects (Govt. agency/Private bodies), Patents & Publications
- Additional work

Necessary corrective actions are taken for the faculty members who score less than the institution standard, are:

- Suggestions are given to enhance their academic skill set with the peer support within a stipulated time period. The performance is reviewed by the head of the department regularly.
- Encourage faculty to attend more & more Faculty Development Programs (FDPs)/workshops.
- Encourage to improve the knowledge about basic concepts of their respective courses.
- Enhance the knowledge of particular course through MOOCs.
- Improve their KRA & KPI

9.3 Feedback on facilities (5)

Total Marks 5.00

Institute Marks : 5.00

Assessment is based on student feedback collection, analysis and corrective action taken.

A standard procedure for feedback on facilities is taken up in the department as following steps:

Feedback is collected from the students on the facilities available in the department such as class room infrastructure, library, labs, canteen, playground, internet facility, etc. The feedback is analyzed and the necessary corrective measures are implemented after discussions with the management.

The entire process is executed in following three stages:

- Feedback collection process
- Feedback analysis
- Corrective measures

- **Feedback Collection:**

A formal feedback is gathered, at least once during every semester, about the use and satisfaction with a variety of facilities and services which are categorized as

- General Facilities & Services
- Technology Services

A broad range of parameters that are used for collecting feedback on facilities is given below:

- Availability of teaching aids such as multimedia projectors, speakers etc. in classrooms/ tutorial rooms
- Library space and ambience, timings and usage
- Adequacy of number of titles in library or range of text and reference books covering syllabus relating to different courses
- Adequacy of Internet facilities in terms availability of terminals & bandwidth
- Drinking water facilities & their maintenance
- Canteen facilities
- Medical & first-aid facilities
- Housekeeping & maintenance
- Infrastructure for Co-curricular and extra-curricular activities
- Mentoring system to help students at individual level

- **Feedback Analysis:** Feedback is analyzed by collecting the feedback from students and staff.

- **Corrective Measures:**

Some of the corrective actions taken are

- Problem resolved related to infrastructures.
- Enhancement related to smart classes.
- Improve the water quality
- Canteen facility also improved

9.4 Self-Learning (5)

Total Marks 5.00

Institute Marks : 5.00

Self-Learning is an individualized method of learning, collecting information, processing and retaining it without the need of another individual to teach it.

Scope of Self – Learning:

- Web based learning (teaching a course online or partially online through MOOCs, edX, Coursera, Webinars, YouTube)
- Library/ Digital Library
- Collaborative Project Based Learning
- Professional bodies
- Club activities
- Assignments
- Industrial visits
- Seminars & workshops

Following are the various modes of self-learning and facilities created in the department.

Table 9.4.1 Modes of self-learning and facilities

Web based learning	• The department has created internet facility with high-speed leased line and 450 computer terminals facility to promote and motivate students to self-learning. • Various sources of information, media and materials such as texts, images, video integrate as self- learning content for the students.
Library/Digital Library	• Availability of course e-materials, digital library facility and availability of video lectures. • LCD projectors for presentations have been facilitated. • Central library equips students with learning skills and latest subject knowledge. • Availability of NPTEL and SWAYAM videos. • E-books
Project Based Learning **(Projects under MoUs)**	• Collaborative Project Based Learning offered for final year students: Project Work Phase-I in 7th Semester Project Work Phase-II in 8th semester • Collaborative Project Based Learning enhances real-time knowledge industrial technology, technical skills with exposure of the students.
Professional Bodies	• We provide facilities of Professional Bodies like IEEE, CSI, etc. to those students who are associated and participate in the activities of these Professional Bodies.
Club Activities	• Various students club activities take place are organized to enhance team work and inter-personal skills. • We have Creative Club, Cultural club, Techno club and Sports Club for organizing activities.
Assignments	• It enables students to go through the topics in a more elaborate manner in order to explore the academic topic and enhances higher order thinking.
Industrial visit	• Industrial visit is a part of curriculum during which students visit companies and get insight regarding the internal working environment of a company. • It helps students to gain first-hand information regarding functioning of the industry. • Provides an opportunity to plan, organize and engage in active learning experiences both inside and outside class room. • Provides an awareness and importance of industry in the real working world. • Assist them for future placement. • Helps to enhance their interpersonal and communication skills, it also enriches the knowledge about industrial practices.
Seminars & workshops	Seminars and workshops are conducted on specific topics related to emerging technologies and job opportunities.

- **Facilities for learning beyond the syllabus**

- The time table has been put into practice in such a way that it can provide the students free slots wherein they can go for self-study, group study with fellow classmates or study in the library.
- Students have the opportunity of extended library hours beyond working hours.
- During free slots, the students refer to various resources to update their general and subject specific knowledge.
- A variety of newspapers/ magazines/periodicals are subscribed by the departmental library.
- Students can also access the digital library of free e-books, online NPTEL Lectures and various e-Journals that are available through institutional LAN and Wi-Fi.

Table 9.4.2 Self Learnings Process

S. No.	Self-learning process	Tools	ICT support
1	Lecture materials in course page	Lecture materials in course page	List of Websites which offers online certification courses
	MOOC	MOOC	Swayam-https://swayam.gov.in/
	MIT Course ware etc./uploaded lectures material	MIT Course ware etc./uploaded lectures material	NPTEL-ListofWebsiteswhichoffersonline certificationcourses Swayam-https://swayam.gov.in/

			NPTEL-https://onlinecourses.nptel.ac.in/ Mooc-http://mooc.org/ (http://mooc.org/) Edx -https://www.edx.org/ (http://www.edx.org/) Coursera-https://www.coursera.org/ (http://www.coursera.org/) Udacity -https://in.udacity.com/ Udemy -https://www.udemy.com/ (http://www.udemy.com/) Khanacademy - https://www.khanacademy.org/ (http://www.khanacademy.org/) Skillsahre -https://www.skillshare.com/ (http://www.skillshare.com/) Harvard University -https://online-learning.harvard.edu/ Ted - https://ed.ted.com/ Alison -https://alison.com/ Futurelearn - https://www.futurelearn.com/ (http://www.futurelearn.com/) Web Development- https://digitaldefynd.com/best-free-web-development-courses-tutorials-certification/ Digital Marketing - https://digitaldefynd.com/best-free-digital-marketing-certifications/ ios app development- https://digitaldefynd.com/best-ios-app-development-course-tutorial/ Open Learn - http://www.open.edu/openlearn/ (http://www.open.edu/openlearn/) Future Learn- https://www.futurelearn.com/ (http://www.futurelearn.com/)
2	Videos created by Faculty members	Recorded by Faculty as part of classroom.	Online through ERP/LMS. https://Teerthanker Mahaveer University - A Truly Global University (tmu.ac.in) (https://www.tmu.ac.in/college-of-computing-sciences-and-it/study-material)

3	E-books	Login and Password	Internet
4	Magazine and Journal	DELNET, EBSCO Database (Login and Password)	Internet

9.4.1.Learning Management System (LMS)

- The university, in association with e-learning sites, has given the opportunity to the students to connect online for the various books prescribed in the curriculum.
- Students and respective faculty members teaching the courses get login credentials from e-learning sites to use all prescribed digital books.
- The available Internet bandwidth is sufficient to accommodate all the students enrolled for the specific course.
- Specified Computer lab is available for the students on request when regular lab is not scheduled in the time table.
- We provide the platform for online education through **Great learning Olympus Digital Campus.** This platform has the following features:

- Entire students experience in one platform
- Live classes, grades, e-certificate
- Facilitate and automatically assign and track group activities, projects and peer learning
- Course materials like recorded lectures, assignments and notes can be assessed easily by all students from one place.
- The Great learning platform can be used for conducting internal exams
- The Great learning platform can be used for evaluation of internal exams
- The award Lists can be generated automatically in Great learning
- Project presentation can be conducted in this platform
- Attendance monitoring can also be done in this platform
- The Great learning platform is very good tool for Online class management in present Covid-19 situation.

9.5 Career Guidance, Training, Placement (10)

Total Marks 10.00

Institute Marks : 10.00

They provide training covering various aspects such as quantitative ability, reasoning ability, verbal ability, group discussions, personal interview, resume writing, general aptitude test, HR mentoring, soft skills, and shortcuts to company questions, company specific training, online test and evaluation.

The students' desires and abilities are evaluated individually and are advised the way forward accordingly. The Training Sessions are arranged for the augmentation of students to cater to the challenges of the corporate world. Career counseling programs are undertaken periodically for the students. Interactive sessions are conducted by the industry experts regularly. The companies are invited for campus placement. We provide necessary facilities for conducting written test, group discussion, technical and HR interviews etc. We arrange industrial visits and trainings for final year and pre-final year students.

The college has established a long-term relationship with corporate for Summer Internship Training, industrial visits and overcome the gap between industry/academia.

Industry Internship/Summer Training Initiative, Implementation & Impact Analysis (B.Tech.-CSE)

Table 9.5.1 Industry Internship/Summer Training Initiative, Implementation & Impact Analysis

S. No.	Initiative	Implementation	Impact Analysis
1	Communications in the form of mail and discussions	Reaching out to organizations for understanding the specific training requirements. Informing students about the opportunities through Notice/Circular. Application form for applying for the training programme and subsequent imparting of training letters.	Total 8 students joined the training.

2	Communications in the form of mail and discussions are conducted with Academy for Training.	Reaching out to organizations for understanding the specific training requirements. Informing students about the opportunities through Notice/Circular. Application form for applying for the training programme and subsequent imparting of training letters.	Total 3 students joined the training.
3	Communications in the form of mail and discussions are conducted with Marwah Infotech for Training.	Reaching out to organizations for understanding the specific training requirements. Informing students about the opportunities through Notice/Circular. Application form for applying for the training programme and subsequent imparting of training letters.	Total 4 students joined the training.
4	Communications in the form of mail and discussions are conducted with KVCH for Training.	Reaching out to organizations for understanding the specific training requirements. Informing students about the opportunities through Notice/Circular. Application form for applying for the training programme and subsequent imparting of training letters.	Total 10 students joined the training.
5	Communications in the form of mail and discussions are conducted with Agile Softech Pvt Ltd for Training.	Reaching out to organizations for understanding the specific training requirements. Informing students about the opportunities through Notice/Circular. Application form for applying for the training programme and subsequent imparting of training letters.	Total 21 students joined the training.

9.5.2 Placement Activities

We have full-fledged Placement cell, which monitors the employment opportunities and arranges campus interviews for the final year students.

1. Pre-Placement Talk:

In order to motivate the students to undertake the placement process for the coming placement drive, T&P Cell organizes a pre placement discussion and motivation class for all the aspiring students. This helps the students to set their career goals in the right direction.

2. Resumes sent to companies:

After the pre-placement talk, students are instructed to prepare their resumes which become the first introduction of the students to the companies. These resumes are then shared with prospective employers for selection.

3. Preliminary Shortlist:

Once the resumes are shared, companies send us a shortlisted students who they think would qualify as per the criteria for the job role shared. Shortlisted students are told to remain prepared for the final placement process.

4. Recruitment Process on Campus:

Companies after having shortlisted the students, visit the campus or asked the students to walk into their office for further hiring process which generally includes a written test followed by a technical interview and then finally HR Interview.

5. Selected students are notified and offer letters sent:

Students are informed about their selections and their offer letters are rolled out to them.

6. Selected students Join Workplace:

Students are motivated to join the organization as per their offer letters on the given dates as shared by the company.

Table 9.5.2 Placement Analysis

S. No.	Initiative	Implementation	Impact Analysis	
			Year	No. of Students Selected
1	Invitations sent for campus drive to Wipro	Campus placement Conducted by the Company, process involved- Aptitude Test, Technical Test, Technical Interview & Final Interview	2020-21	Result Awaited
			2019-20	08
			2018-19	07
2	Invitations sent for campus drive to TCS	Campus placement Conducted by the Company, process involved- Aptitude Test, Technical Test, Technical Interview & Final Interview	2020-21	16
			2019-20	10
			2018-19	06
3	Invitations sent for campus drive to Innolabz	Campus placement Conducted by the Company, process involved- Aptitude Test, Technical Test, Technical Interview & Final Interview	2020-21	33
4	Invitations sent for campus drive to QA Infotech	Campus placement Conducted by the Company, process involved- Aptitude Test, Technical Test, Technical Interview & Final Interview	2020-21	03
5	Invitations sent for campus drive to Tech Mahindra	Campus placement Conducted by the Company, process involved- Aptitude Test, Technical Test, Technical Interview & Final Interview	2020-21	Result Awaited
			2019-20	01
			2018-19	04
6	Invitations sent for campus drive to Capgemini	Campus placement Conducted by the Company, process involved- Aptitude Test, Technical Test, Technical Interview & Final Interview	2019-20	16

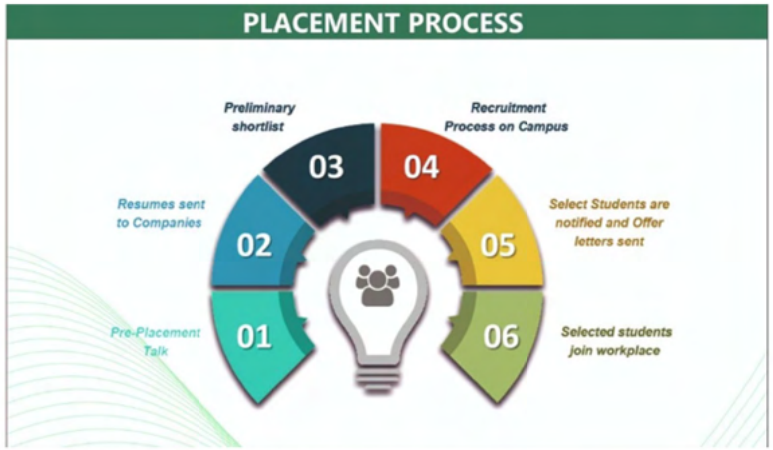


Figure 9.5.1 Campus Placement Support



Figure 9.5.2 Initiatives related to industry interaction (B.Tech.-CSE)

Curriculum is designed in consultation with the industry experts who are member of Academic Council and Board of Studies. In addition, other Industry Experts views are also taken into consideration while revising the curriculum. Vision, Mission, PEOs and POs are developed with their valuable suggestions.

The college also provides the student's in-house training enhance their technical skills by building projects using recent technologies such as Python, Machine Learning, Android and Advance Java etc. The college has entered into an agreement with the following companies and conducted training for partial delivery of the Courses. In addition to the above, the University organize training program related to current industry trends and demands and the trainers are outsourced from industry.

Table 9.5.3 Skills Certification

S. No.	Company	No. of Students Enrolled	Area of Training

1.	Cisco	45	Networking
2.	Smartbrains	15	Networking
3.	IBM	20	Data Science & Cloud Computing
4.	Red Hat	40	Operating System
5.	Oracle	50	Software Development

Table 9.5.4 Industry Experts

S. No	Name of the Expert	Company Name	Broad Area	Date of visit
1.	Mr. Harsh Arora	Crisp Metrics	Insights of Machine Learning with Python	24-05-2021
2.	Mr. Avinash Kumar	Crisp Metrics	Word press	24-05-2021
3.	Ms. Ashmeet Kaur	Skill Clout	Employability Skill Training	17 & 18-09-2018
4.	Ms. Mahima Pandey	Skill Clout	Employability Skill Training	15&16-10-2018
5.	Ms. Devika Majumdar	Silver Peak Global Pvt Ltd	Japanese Language (Nihongo)	08-10-2018
6.	Mr. Sandeep Karan	CAC Ltd	Angular 5 Node JS	04-10-2018
7.	Mr. S.K. Singh	Bhabha Atomic Research Centre (BARC)	Career Opportunities in BARC	21-11-2018

Table 9.5.5 Companies MoUs

S. No.	Name of the Company	Nature of MOU	Outcome of the MOU
1.	Wipro Technologies	Train the trainer (Talent Next Programme)	3-faculties trained.
2.	CISCO	Student Training and Certification	Every year students are trained in the CISCO Technologies
3.	IBM	Student Training with IBM	Every year students are trained in the IBM latest Technologies
4.	I-Nurture	Separate course is being conducted in Collaboration with I-Nurture	Every year students are trained in the latest Technologies with placement assistance.

- **Career Guidance**

  Communication received from reputed institutions with respect to higher studies, campus placements, industry interaction with respect to training / internship/ placements is periodically communicated to the students. Circulars are issued and also details are displayed in department and placement notice boards in addition to dissipation of information through website.

  Counseling is given with respect to higher studies and students are given guidance to excel in GATE, GRE, GMAT etc. by giving them permission and encouragement.

Training & Placement Cell

Pre-placement training is achieved in the early stages itself by including aptitude as a separate subject in the time table itself.

With respect to specific training, CTLD department having well-qualified faculty has been established.

Career Guidance Including Counseling for Higher Studies

- We counsel students for higher studies.
- We encourage students for GRE, GATE, CAT and TOEFL etc. by organizing classes.
- Guidance for online exam (AMCAT) conducted for all students from first year to enhance competency.
- We prepare the students to face any kind of corporate challenges in life without hurdle.
- Several events are organized for overall development of students.
- We conduct online aptitude and English proficiency test of all students and share the result with them.
- Stress and time management sessions are conducted for students.

Initiatives related to industry internship/summer training/Placement Industry Internship/Summer Training Process:

- Identifying the Courses where training and internship is required.
- Finalization of dates for training after discussion with the course in charge and principal.
- Reaching out to organizations for understanding the specific training requirements.
- Informing students about the opportunities through notice/circular.
- Application form for applying for the training programme and subsequent imparting of training letters.

We also have MOUs (Wipro Technologies, CISCO, IBM & I-Nurture) with reputed companies for placement.

Our Campus recruitment program starts by the beginning of the pre-Final semester.

The On Campus recruitment program keeps continuing till the end of their final semester.

We have off campus placement through a few select institutes/ universities.

The effectiveness of the training program is analyzed by the feedback collected from each and every student and the continuous improvement in the placement record.

Placement Process

Placement Initiative, Implementation & Impact Analysis (B.Tech.-CS):

Industry Participation in Curriculum Planning:

In-House Training /Short Term Course:

Companies having Tie-up with the University for Training in B.Tech.-CSE

Expert Lectures: Various expert lectures are organized in the college in which experts from the industry and academia are invited. The following expert lectures were conducted for B.Tech.-CSE.

Collaboration with Industry: To bridge the gap between academics and industry, the college has collaborated with various Industries to expose the students about latest trends and technologies in the industry, thereby enhancing the employability of the students. Table below shows the industry academia collaboration with various industries in the course B.Tech.-CSE.

9.6 Entrepreneurship Cell

Total Marks 5.00

Institute Marks : 5.00

We have an active Entrepreneurship cell of faculty members and students.

- Students and faculty members convene and participate in conferences and meetings aimed at promoting the concept of entrepreneurship.
- Entrepreneurship Awareness Camps are frequently conducted.
- The Faculty of Engineering Entrepreneurship Development Cell (FOE-EDC) encourages the students in becoming budding entrepreneurs for innovation and new business idea.
- It works on the vision of the Government of India to encourage the students for innovative entrepreneurial activities and is encouraged by the Ministry of Micro, Small, and Medium Enterprise (MSME).
- It is cultivating business ideas in the students and helps them grow to be business visionaries by giving them essential assets and knowledge.
- It organizes lectures on entrepreneurship activity and attracts the attention of students.

List of Events by Entrepreneurship Cell

Table 9.6 : Entrepreneurship Cell Events

S. No.	Events	Date	Venue
1	Women Entrepreneurship Development Programme (WEDP), Funded by DST, Govt. of India	14 June-12 July, 2021	Online
2	FDP on Entrepreneurship, Funded by DST, Govt. of India	26 April-28 May, 2021	Online

3	Entrepreneurship Awareness Camp (EAC), Funded by DST, Govt. of India	28-30 December, 2020	LT-4
4	Entrepreneurship Awareness Camp (EAC), In Collaboration with ABES, Engg. College, Ghaziabad, U.P.	04-06 October, 2018	LT-4
5	Entrepreneurship Awareness Camp (EAC), In Collaboration with ABES, Engg. College, Ghaziabad, U.P.	12-14 March, 2018	LT-4

Title: Session on Business Model Canvas

Date: 17 April 2021 Start time: 03:00 PM End Time: 05:30 PM

Type of Event: Webinar

Description of Event:

Prof. R. K. Dwivedi, Principal, CCSIT, addressed the participants about the startups and the business model develop for them in order to establish a profitable venture. He said that students of technical college may not be well versed with business but they are very much familiar about modeling and use of canvas. He welcomed the resource person to enlighten all the participants with his rich knowledge and precious experience.

Dr. Gupta began his address by explaining the concept behind each word of the workshop by bifurcating it. He discussed about the various business models with examples followed by different enterprises, start-ups, NGO's etc. He said that the objective of business model is not only to earn profits but also to create the wealth for the business; its stakeholders and society enlarge. He discussed about the various components of the model that helps to create an effective and reliable business strategies. He also described the canvas and how it could be used for developing and planning of business models. By a demonstration, he created a business model using the business model canvas and using common parameters for a business and following a specific guideline. He also said that different organizations uses this modelling canvas differently but maintain the common parameters in it. Finally in question answer session he satisfactorily resolved the various queries raised by the participants.

Agenda:

To brief the importance of Business Plans and Models in establishment of new venture

To use Business Model Canvas in planning Business Models



Figure 9.6.1 : Webinar on Business Model Canvas by IIC

Title : Startup & Minimum Viable Product

Date: 19 June 2021 Start time: 11:00 AM End Time: 01:00 PM

Type of Event: Webinar

Description of Event:

The webinar started with a briefing about the Institution's Innovation Council by Ms. Priyanshi Jain, she also introduced about the theme of the session. Ms. Shaili Jain, welcomed the honourable Principal Dr. Rakesh Kumar Dwivedi and the keynote speaker of the day Dr. Surabhi Singh, Associate Professor IMS Ghaziabad. The topic of her discussion was 'Start up and Minimum Viable Products'. Dr. Surabhi explained each and every aspect of MVP. In her session she covered the basics of viable products, its effectiveness and its impact on market, and others. MVP is widely used concept and its application ranges from business to industry and to successful entrepreneurs. It has a huge scope of investment in products and an entrepreneur can invest in this. Dr. Surabhi also played a quality video to easily elaborate the things and engage the participants with her pace. All participants gave their attention and appreciated her session.

Session was very enlightening and informative and the participants also responded by appreciating the session through their messages in the chat box. The session was coordinated by Dr. Megha Sharma with the team headed by Mr. Ashish Bishnoi and ended with the vote of thanks by Mr. Rajendra Prasad Pandey to the speakers and all the participants.

Agenda:

Discuss about minimum viable product and its importance for startups and new ventures to identify the market needs.

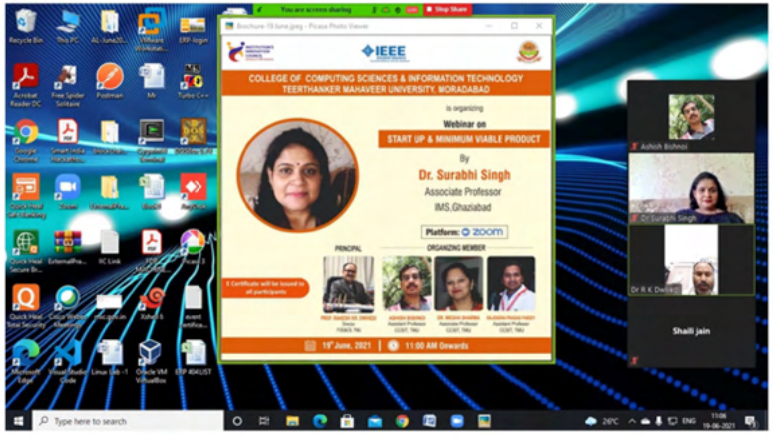


Figure 9.6.2 : Webinar on Startup and Minimum Vibale Product by IIC

Title: Session on Accelerators/Incubation Opportunities for the students and faculties – Early Stage Entrepreneurs

Date: 21 June 2021 Start time: 11:15 AM End Time: 01:00 PM

Type of Event: Webinar

Description of Event:

The session started with the welcome and introduction of the speaker of the day Dr.Sugandha Agarwal by the session moderator cum organizing member Ranjana Sharma. Dr.Sugandha is an Assistant Professor in the department of English, Moradabad Institute of Technology. The topic of her discussion was 'Accelerators/ incubation-Opportunities'. She explained the basics of start-up, incubator and accelerator nicely. She also threw light on the importance of entrepreneurship in todays scenario and also emphasized on the concept of becoming Job Providers rather than Job Seekers. She discussed about various inspiring personalities who have made their positive contribution to the society. The sessions was very enlightening and informative and the participants also responded by appreciating the session through their messages in the chat box. Prof. R.K. Dwivedi, conveyed his wishes on this occasion to all the faculty and non-faculty members as well as the students. The session was coordinated by Mr. Asish Bishnoi, Mrs.Ranjana Sharma and Mr. Rajendra Prasad Pandey. The session ended with vote of thanks to the speakers and all the participants. All participants gave their attention and appreciated the session.

Agenda:

To discuss about incubator and accelerators

Role of incubators and accelerators for startups

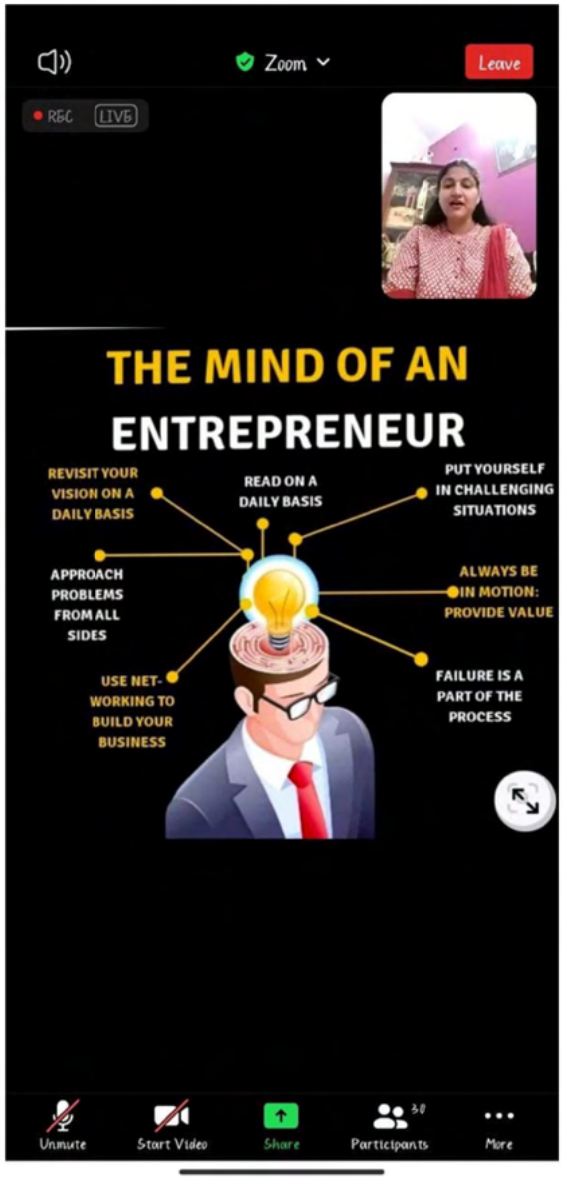


Figure 9.6.3 : Webinar on Accelerators/Incubation Opportunities for the students and faculties – Early Stage Entrepreneurs

9.7 Co-curricular and Extra-curricular Activities Total Marks 10.00

Institute Marks : 10.00

Our department encourages the students for various sports and physical activities. Our department students are participating in various activities inside and outside colleges. Our university provides concerned facilities for Indoor as well as Outdoor sports and other allied activities. Students are engaged in co-curricular and extracurricular activities and field trips through student chapters and forums, which provide opportunities for students to explore new fields of interest, cultivate leadership skills, and learn teamwork. In this regard, institution has formed various committees for participating and organizing the cultural and sports activities. Every department has its own association through which various department symposiums, project expo and other technical and non-technical events are being conducted. These association activities benefit in developing leadership skills and make them work in teams.

Co-curricular and Extra-curricular Activities are conducted for the intellectual, moral, physical and social developments of the students.
The above activities provide a chance to channelize the energy in a fruitful direction.
Faculty of Engineering, TMU understands the importance of co-curricular and extra-curricular activities.
In order to promote students, the department has various technical and non-technical groups functional at the department level.
The students are encouraged to participate in these activities beyond their course curriculum.
At Faculty of Engineering, TMU, students participate in speech, debate and essay writing competition, quiz competition-KHOJ, cultural activities like singing, dancing, drama, skits, writing (article, poetry) and they are open to participate in various sports activities.
Students are never limited to one such activity and can participate in more than one activity. The students achieved more practical exposure through their own learning.
Co-Curricular activities help in the holistic development of a students' ability such as creativity, physical growth, spirituality, ethical values and character building.

Co-curricular activities:

Co-curricular activities are conducted for the growth of students in their different walks of life.
Co-curricular activities are focused for the development of vision and thought of the students.
The college has designed and developed an environment in which students participate in various Co-Curricular activities while maintaining the academic standards.

The following values are inculcated in the students through these Co-curricular activities.

1. Educational values
2. Cultural Values
3. Development of Social Values
4. Psychological Values
5. Recreational Values
6. Physical Development Values
7. Development of Civic Values

The role of Co- Curricular activities in student's life is important. It helps in the following ways:

1. Overall Personality
2. Strengthened Self-confidence
3. Developed specialized skills
4. Improved Academic performance
5. Greater Opportunities
6. Sense of Responsibilities
7. Exposure to new activities

Extra-curricular activities:

Extracurricular activities fall beyond the scope of a student's regular curriculum. The activities like sports, volunteer work, summer activities, club and organization etc.
These activities might seem trivial as the name implies; they are extra to the curricular but they remain one of the main building blocks of education.
They play an important role in providing a productive break from academia.
As a good skill building activity, extracurricular activity reflects on students' resume too.

- **Regular Activities of NSS:**

Regular activities include functional literacy and non-formal education, plantation, preservation and up keeping of trees, construction and repair of roads, cleaning of village ponds and wells, construction and laying of parks, health education and primary health care, first aid awareness, anti-drug addiction drives, AIDS awareness, advocating advanced agricultural practice, disaster management (cyclones, floods, earth-quakes, drought), women empowerment, road safety, socio-economic surveys, improvement of campus, blood donation camps, immunization/health camps, environment/waster land development and conservation, literacy/educational programme, celebration of important day, national integration/communal harmony programmes, work

in hospitals/orphanages, plastics eradication, etc.

Flagship Programmes:

Environment Awareness Programme;
Energy Conservation Programme;
Anti-Ragging Programme;
First Aid Training Programme;
Traffic Awareness;
Skill development;

Website Link: https://www.tmu.ac.in/tmu/nss

Activities at Computer Science and Engineering Department

The following activities are regularly conducted in the college and/or participated by students outside the college:

Extra-Curricular Activities- Year 2021

S. No.	Event Name	Event Date
1	splash-the joy of colors (Holi fest)	23-03-2021
2	Vidyarambh- Vasant Panch6ami celebration & principals excellence award ceremony	16-02-2021
3	Lohri, Makar Sakranti & Pongal celebration trio fest	14-01-2021
4	Celebration of Parakram Diwas	23-01-2021

Extra-Curricular Activities- Year 2020

S. No.	Event Name	Event Date
1	Atal Bihari Vajpayee Jayanti	24 to 27-12- 2020
2	Christmas	25-12-2020
3	New Year Welcome Bash 2K21	31-12-2020
4	Deepotsav	10-11-2020
5	Diwali Celebration	11-11-2020
6	Gandhi Jayanti	02-10-2020
7	CELEBRATION OF BIRTH ANNIVERSARY OF DR APJ ABDUL KALAM, 11th PRESIDENT OF INDIA	15-10-2020
8	Navratri Puja	19-10-2020
9	Mask Distribution by I. Nurture	22-10-2020
10	Havan Pooja	24-10-2020
11	Sardar Vallabhbhai Patel Jayanti & Maharishi Valmiki ji	31-10-2020
12	Engineers Day	15-09-2020
13	Vishwakarma Jayanti	17-09-2020
14	RELEASE OF S&T REVIEW	18-09-2020

15	World Environment Day webinar	05-06-2020
16	INTERNATIONAL WEBINAR ON COVID-19	10 to 11-06-2020
17	RIGID PAVEMENT	25-06-2020
18	Dubai Trip (Dr. Rajeev & Manish Tiwari)	08-01-2020
19	NATIONAL YOUTH DAY	14-01-2020
20	Subhash Chandra Bose Jayanti	23-01-2020
21	National Voters Day, 2020	25-01-2020
22	MPL-2 Inauguration Ceremony	27-01-2020
23	Technovation Hackathon 2 Organized By - Sharda university supported by GNIDA	27-01-2020
24	Basant Panchami, Saraswati Puja	30-01-2020
25	Samvaad	15-02-2020
26	Workshop on Guided Meditation for professionals in Teaching	25-02-2020
27	Expert Talk on Power of Women in Shaping New India	06-03-2020

Extra-Curricular Activities- Year 2019

S. No.	Event Name	Event Date
1	Navratri-Bhakti Mahotsav	05-10-2019
2	Innovation Day campaign	14-10-2019
3	SPARDHAA	19-10-2019
4	Deepotsav	25-10-2019
5	Sardar Vallabhbhai Patel Jayanti	31-10-2019
6	Cricket Match-FOE & CS Vs TMIMT	11-11-2019
7	Diwali and Children's Day Quiz	16-11-2019
8	B.Tech. Freshers Party	29.11.2019
9	Hariyali Teej Celebration	09-08-2019
10	Cultural Event:-Independence Day celebration	13-08-2019
11	Leadership talk series-Shri. Ramesh Pokhrial Honble Minister of MHRD.	22-08-2019
12	Fit India movement	29-08-2019
13	Swachhata Abhiyaan in Pakbara	03-09-2019
14	Paryushan Parva	03-09-2019
15	Foundation Day of TMU	14-09-2019
16	Memento Distribution Ceremony, FOE	17-18-09-2019
17	WORKSHOP ON SPIRITUAL REMEDIES FOR A HEALTHY LIFE STYLE	27-09-2019
18	Disha The Techno Fest	30-09-2019 & 01-10-19
19	Webinar India First Leadership Talk Series	04-01-2019

20	Vivekananda Jayanti	12-01-2019
21	Basant Panchami Pooja	11-02-2019
22	Tribute To Martyrs of Pulwama CRPF Jawans	15-02-2019
23	Technotsav -2019	23-02-2019
24	NATIONAL SCIENCE DAY	28-02-2019
25	IIT Roorkee Visit	04-03-2019
26	IIT BHU Visit	07-03-2019 to 13-03-2019
27	International Womens Day- Role of Womens in Shaping New India	08-03-2019
28	KHOJ-2019	09-03-2019 to 02-04-2019
29	SPLASH-THE JOY OF COLORS	15-03-2019
30	Arduino Day Celebration	16-03-2019
31	Talk on Art of Decision Making by Shri Ajit Dobhal Ji (National Security Advisor, Govt of India)	19-03-2019
32	Importance of Personal Habits and Hygiene in Maintaining Optimal Physical and Mental Health	11-04-2019
33	Vote for Nation Program	18-04-2019
34	B.Tech. Fresher Party	29-04-2019
35	Workshop on Cognitive Skills, Design and Critical Thinking	30-04-2019
36	B.Tech. Farewell	01-05-2019
37	IGNITE-2K19	03-05-2019
38	Yoga Day	21-06-2019

Co-Curricular Activities -Year 2021

S. No.	Event Name	Event Date
1	National Science Day 2021	02-03-2021
2	International Womens Day	08-03-2021
3	Engineers s Role in Energy Conservation, Energy Efficiency, Use of Renewable Energy, Environment, Climate Change	17-03-2021
4	Incubation Visit at ABES-EC GZB	19-03-2021
5	Intellectual Property Rights (IPRs) & IP Management	19-03-2021
6	RTGAST 2021, Conference	12-02-2021
7	EDUCATION CONCLAVE	28-02-21 & 01-03-21
8	Expert Talk on Toycathon	11-01-2021
9	National Youth Day	12-01-2021

Co-Curricular Activities -Year 2020

S.No.	Event Name	Event Date

1	Entrepreneurship and Innovation as Career Opportunity	02-12-2020
2	Smart-2020	4 & 5 Dec,2020
3	Cyber Security Innovation Hackathon	08-12-2020
4	More about Electronics Test and Measuring Instruments	12-12-2020
5	National Conference on Materials & Devices-2020	18-19, December,2020
6	National Innovation and start-up Policy (NISP)	22-12-2020
7	National Mathematics Day 2020	22-12-2020
8	Entrepreneurial Development into the field of IoT and Cloud Computing	23-12-2020
9	Motivational session by successful Innovator	26-12-2020
10	Entrepreneurship Awareness Camp (EAC)	28 to 30-Dec-2020
11	Alumni Meet & Interaction under Samwad Series	01-11-2020
12	ICAC-2020 & Book Chapter	07-11-2020
13	Innovations in Online Teaching & Assessments	21-11-2020
14	Constitution Day	26-11-2020
15	National Webinar on Role of English Communication in academics & professional success	01-10-2020
16	Khoj 2020	02-10-20 to 04-11-20
17	Android Development with Kotlin	05 to 10-Oct-2020
18	International Webinar on Mysterious Relationship of the Sun and the Earth	05-10-2020
19	Technical Session on Induction Program 2020	05-10-2020
20	Coding Bootcamp 1.0 IRON HACK REACTOR	06-10-2020
21	Hands-on Workshop on Data Recovery and Security	08-10-2020
22	Orientation Program & Bridge Course for New Entrants	09-10-2020
23	IIC Celebration	16-10-2020
24	SIH 2020	1 to 4-Aug-2020
25	Symposium on NEP-2020	5 to 11-Sep-20
26	Orientation Day Program	25-Sep to 15-Oct-2020
27	Machine Learning using Python	22 to 29-April-2020
28	Novel Approaches of Blockchain Technology & Its Application	22-28 May, 2020
29	Cyber Security Webinar dated	27th May 2020
30	Smart Energy Solutions to Boost Power Sector Economy During Pandemic	06-Jun-20
31	ECE Webinar Schedule	8-9, June,2020
32	Writing a Research Grant Proposal	15-Jun-20

33	Webinar Proceedings physics	16-17-June,2020
34	CSE-International Webinar Report	17-18 June,2020
35	INTERNATIONAL FACULTY DEVELOPMENT PROGRAM ON-converted	24 to 26-June, 2020
36	Webinar proceeding - understanding AutoCAD for beginner	7-8-July,2020
37	Report of webinar waste management	14-July,2020
38	AI & Data Science Webinar Proceeding	22nd July, 2020
39	Data Analytics Webinar Proceeding	23-Jul-20
40	HOW TO CREATE VIDEO TUTORIALS	14 to 18-Jan-2020
41	Special Session by Mohit Gambhir, Innovation Cell (MIC) on SIH 2020 Insights	24-01-2020
42	Webinar on Contribution of Building Chemicals in Building Performance	29-01-2020
43	Smart India Hackathon 2020	30-01-2020
44	Workshop on Industrial Internet of Things (IIOT)	03-02-2020
45	Webinar Introduction to Machine Learning with AWS	04-02-2020
46	Workshop on Machine Learning using Python	06 & 07- Feb-2020
47	Recent trends in Design Innovation & HCI	07 & 08-Feb-2020
48	IBM Book Distribution	15-02-2020
49	Seminar on Research Pedagogy	17-02-2020
50	Guest Lecture on Recent trends in Machine Learning	19-02-2020
51	IBM Book Distribution	25-02-2020
52	National Science Day-2020	28-02-2020
53	National Conference on Industry 4.0 (NCI 4.0)	29-02-2020
54	TMU Alumni Meet 2020	01-03-2020
55	MATLAB for Beginners	04 & 05-March-2020
56	Institute of Himalaya bio research technology Palampur (Visit)	04 & 07-March-2020
57	Radico Khaitan Ltd., Rampur (Visit)	04-03-2020
58	Workshop on Stress Management in Totality-A Practical Approach	05-03-2020
59	Aryabhata Research Institute of Observational Sciences, Nainital & G.B. Pant University Pant Nagar	06 & 07-March-2020
60	SPLASH-THE JOY OF COLOURS	06-03-2020
61	Management Day and MPL-2 Closing Ceremony, I. Nurture	16-03-2020

Co-Curricular Activities -Year 2019

S. No.	Event Name	Event Date
1	IBM Book Distribution	01-10-2019

2	Socioeconomic Benefits through Propagation of Fundamental Science	04-10-2019
3	Data science using R-I. Nurture	05-10-2019
4	Hands-on Workshops on AWS SYSOPS (I. Nurture)	10-10-2019
5	TRAINING ON DATA SCIENCE USING R	10-10-2019
6	Workshop on Network Security and its Concepts	10-10-2019
7	SAMAGRA-2019", an Inter-Institutional Techno Cultural Fest	19-10-2019
8	Workshop on Intellectual Property Rights (IPR)	19-10-2019
9	AMCAT	22-10-2019
10	Guest lecture on Big Bang and the Expanding Universe	23-10-2019
11	Oracle Short term Course-Kit Distribution	05-11-2019
12	Workshop on introduction to python for beginners	07-11-2019
13	IBM Day Celebration	15 & 16-11-19
14	KVCH Oracle	15-11-2019
15	Automobile Engineering and IC Engine	18 & 19-11-19
16	SMART 8th-2019	22-23 Nov. 2019
17	IBM Placement Drive Visit at United Group of Colleges, Greater Noida	26-11-2019
18	Design and installation of Solar Photovoltaic System	02 & 03-12-19
19	Principal Excellence Award	02-12-2019
20	National Mathematics Day-2019	23-12-2019
21	IOT (ARDUINO)	17-07-2019
22	Induction Programme of all courses	01-08-2019
23	Android Kit Distribution	20-08-2019
24	NPTEL certificate Distribution.	22-08-2019
25	Samsung Company Visit to college	22-08-2019
26	Technical Session for Agro Advisor.	22-08-2019
27	INDUCTION PROGRAMME	28-08-2019
28	Industrial visit of B.Tech(IBM)	28-08-2019
29	Cisco Kit Distribution	29-08-2019
30	WORKSHOP ON OUTCOME BASED EDUCATION AND ACCREDITATION	07-09-2019
31	Engineering For Change (Engineers Day) (I. Nurture)	14-09-2019
32	Workshop on advance concrete mix and technical presentation	14-09-2019
33	Workshop on Virtual Laboratories	14-09-2019
34	Inauguration of I-Mac Lab	17-09-2019

35	Two-day Workshop on Python	21,23-09-2019
36	Chakravyuh Business Competition	21-09-2019
37	PHP & JAVA certificate distribution	24-09-2019
38	National Seminar on Advanced Python	30-09-2019
39	I. Nurture Inaugural	08-02-2019
40	IOT Workshop	15-16-02-2019
41	Machine Learning Using Python	21-02-2019
42	Institutional Dynamics Creation for Developing Academic Culture-NSS	22-02-2018
43	Alumni Talk	23-02-2019
44	Smart India Hackathon	01-05-03-2019
45	Expert Talk on FUZZY RULE APPROACHES USING MATLAB	13-03-2019
46	THEORY AND PRACTICE SESSION ON APPLICATION DEVELOPMENT USING ANGULAR JAVA	18-03-2019
47	Implementation of Machine Learning Algorithms using Python	28-03-2019 and 29-03-2019
48	International Conference on Advanced Computing-2019	26-04-2019

Co-Curricular Activities -Year 2018

S. No.	Event Name	Event Date
1	SMART-2018	23-24-11-2018
2	Industrial visit to IBM Research Lab, New Delhi	28-11-2018
3	CAC LTD. (ANGULAR 5) Workshop	04-10-2018
4	Workshop on Mobile Application Development	16-10-2018
5	Workshop on Designing Network	26-10-2018
6	Expert Talk on Research Methodology	16-09-2018
7	Android Short Term	13-08-2018
8	Java Short Term	21-08-2018
9	Introduction to Data Science using Python & R tool	25-07-2018





Placment Drive of Barclays Bank



Placment Drive of Cognixia





Placment Drive of Cryptus Cyber Security





Placment Drive of Silver Peak Global Pvt Ltd





Placment Drive of TCS



SHRI GANESH VANDANA



ANNUAL FUNCTION OF THE COLLEGE- IGNITE







WINNERS OF CULTURAL EVENTS ON PARYUSHAN PARV



Champions of Champion trophy



Techno Fest Winners



Freshers Party



Freshers Party



Annual Cultural Fest



Sports Winner B.Tech CS



Spardha 2019



Diwali Celebration



Pariksha Pe Charcha Webinar




TEERTHANKER MAHAVEER U
MORADABAD
SATURDAY, JULY


TEERTHANKER MAHAVEER UNIVERSITY
Welcome
Dr. Dinesh Sharma
Shri Bhupendra Singh Chaudhary


TEERTHANKER MAHAVEER
MORADABAD
Dr. Dinesh Sharma



Convocation on 31 July 2021

10 GOVERNANCE, INSTITUTIONAL SUPPORT AND FINANCIAL RESOURCES (120)

Total Marks 120.00

10.1 Organization, Governance and Transparency (55)

Total Marks 55.00

10.1.1 State the Vision and Mission of the Institute (5)

Institute Marks : 5.00

VISION

To be internationally recognized as a premier institution of excellence, providing quality education, research and consultancy services to the global society.

MISSION

Our Endeavour is to impart knowledge and develop critical skills necessary to succeed both in professional and personal life by promoting learning supported by world-class faculty, infrastructure, technology, curricula and collaborative teaching and research with premier institutions in India and abroad.

10.1.2 Availability of the Institutional Strategic Plan and its Effective Implementation and Monitoring (25)

Institute Marks : 25.00

Availability of the Institutional Strategic Plan and its Effective Implementation and Monitoring (25)

Institutional Strategic Plan

Faculty of Engineering, TMU plans strategically based on the feedback from different stakeholders. After the NAAC visit in 2016, few strategic areas were taken to improve the quality. They are as follows

a)Perspective Plan of FOE, TMU 2017-2032

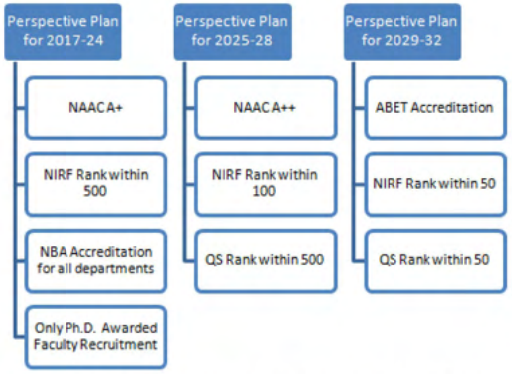


Figure : 10.1.2 : Perspective Plan of FOE, TMU 2017-2032

. Strategic Plan to improve Research Publications

n 2016, it was decided to improve quality publications in Scopus indexed journals.

mplementation

It is desirable that Professors & Associate Professors will publish minimum 3 articles in Scopus indexed journals and Assistant Professors will publish minimum 3 articles in Scopus indexed journals
With the objective of promoting excellence in research, the University has framed the regulations "Teerthanker Mahaveer University Regulations on Financial Assistance to faculty for promotion of research and students' participation in extra-curricular activities" as per the following scheme:

Table 10.1.2.1 : Publications

S.No.	Database/level of journals for publication	Incentive (Rs)
1.	Publication in journals indexed in UGC CARE list, Indian Citation Index	3000
2.	Publication in journals indexed in Scopus, PubMed, Web of Science	5000
3.	Book by National publisher with established peer review system	6000
4.	Book by International publisher with established peer review system	8000
5.	Chapter in a book of National publisher with established peer review system	1500
6.	Chapter in a book of International publisher with established peer review system	2500
7.	Full Paper publication in conference proceedings with ISBN numbers	1500

Monitoring

Collecting monthly reports are from all departments and putting to Registrar
The number of articles expected to be published in Scopus indexed journals to improve quality of research as per given table:

Table 10.1.2.2 : Expected Publications

2017-24	2025-28	2029-32
150	200	250

c. **Strategic Plan to improve Projects**

To improve the projects funding from external agencies

Implementation

1. Call for proposals
2. Evaluating & Selecting Proposals
3. Providing Seed Grants

Monitoring

VC & Director will be monitoring the projects which are granted in TMU Seed
In 2017-2024

- v. No Of Proposals received :35
- v. No of Projects sanctioned :17
- v. Project Value :Rs.34,00,000
- v. No of Publications : 30
- vi. No of Patents submitted : 80
- v. 8 projects will be selected and forwarded to external agencies for major funding

Strategic Plan to improve Ph.D

To improve the quantity & quality of Ph.D Scholars

Implementation

Recruitment of Professors and Associate professors in every department to guide the scholars.
Internal faculty are motivated to register for Ph.D by being provided with 50% concession in the Ph.D Fee.
Providing incentives for publications
Turnitin license purchased to improve the quality of research articles

Monitoring

Every 6 months research scholars have to conduct CRC Meeting
Every scholar is to provide a report on the work done in past 6 months
In the year 2017,the acceptable level of Plagiarism was 25% and it is now fixed as 10% to increase the quality of the thesis as per UGC recommendation

Strategic Plan to improve Teaching Learning Process

To create ICT enabled culture

Implementation

Teaching in Mixed Mode (Physical and Virtual)
Campus wide WiFi provided
4 Smart Board classes
FDP on pedagogy is conducted twice a year

Monitoring

Lesson plan is frequently checked and staff is motivated to effectively use the ICT Facility

Strategic Plan towards Students Support

Implementation

Personality Development classes were regularly conducted by Center for Teaching Learning and Development (CTLD)
Classes for GATE, IAS & other such competitive exams will be conducted
Conducting Entrepreneur Training Programs
Motivating the students through Interactions with Alumni

Monitoring

Constantly monitoring the impact of various activities conducted by Faculty of Engineering TMU.

Strategic Plan towards continuous improvement

Implementation

Conduct of Academic and Administrative Audit annually by all the university
Wipro Certification program for 60% throughout students
Motivating students for MOOC, Swayam and NPTEL and Spoken Tutorial online courses

Monitoring

Suggestions by external experts from industry and academia are taken and necessary action based on the report is implemented.

10.1.3 Governing body, administrative setup, functions of various bodies, service rules, procedures, recruitment and promotional policies (10) Institute Marks : 10.00

Table 10.1.3.1 : Governing Body

Name	Designation	Organization & Address	Status
Shri Suresh Jain	Chancellor	Teerthanker Mahaveer University, Delhi Road, Moradabad	Chairman
Shri Manish Jain	Group Vice Chairman	Teerthanker Mahaveer University, Delhi Road, Moradabad	Member
Prof. Raghuvir Singh	Vice Chancellor	Teerthanker Mahaveer University, Delhi Road, Moradabad	Member
Smt. Rinku Mittal		Teerthanker Mahaveer University, Delhi Road, Moradabad	Member
Ms. Arunima Mittal		Teerthanker Mahaveer University, Delhi Road, Moradabad	Member
Shri Akshat Jain		Teerthanker Mahaveer University, Delhi Road, Moradabad	Member
Shri Vipin Jain		Teerthanker Mahaveer University, Delhi Road, Moradabad	Member
Shri Ashu Jain		Teerthanker Mahaveer University, Delhi Road, Moradabad	Member
Ms. Swati Jain		Teerthanker Mahaveer University, Delhi Road, Moradabad	Member
Shri D. K. Jain	Legal Expert	Teerthanker Mahaveer University, Delhi Road, Moradabad	Member
Prof. R. K. Mittal	Vice Chancellor	Chaudhary Bansi Lal University, Hansi Road, Bhiwani (Haryana)	Member
Shri Sandeep Vaish	Financial Expert	Teerthanker Mahaveer University, Delhi Road, Moradabad	Member
Shri B. N. Vij	Industrialist	Asian Handicrafts,	Member
Dr. Aditya Kr. Sharma	Registrar	Teerthanker Mahaveer University, Delhi Road, Moradabad	Member Secretary

Administrative Setup:



Figure 10.1.3.1 : Administrative Setup

Table 10.1.3.2 : Functions of Various Bodies

Position	Functions
Governing Council	• Frame directive principles and policies • Amend and approve policies from time to time • Approve budgets
Principal	• Design & define organization structure • Define & delegate responsibilities of various positions in the organization • Ensure periodic monitoring & evaluation of various processes & sub-processes • Ensure effective purchase procedure • Define quality policy and objectives • Prepare annual budget • Conduct periodic meeting of various bodies such as Governing Council, Grievances Redressal Committee etc. • Manage accounts and finance • Employee recruitment process • Office Administration • Compliance with AICTE, UGC& University • Admission • Resource Generation • Internal and External examinations • Library Up gradation

Head of Department	• To discharge routine duty of Principal during absence of Principal • Annual/Bi-annual Magazine • Resource Provision • Alumni interaction • Prepare and execute academic calendar • Oversee the teaching-learning process • Carry out result analysis and submit corrective measures to Principal • Initiate supplementary teaching measures • Co-curricular activities • Formation of student council • Cultural activities • Sports activities • Student discipline • Student health care • Student orientation • Plan and execute academic activities of the department • Maintain discipline and culture in the department • Maintain the department neat and clean • Pick and promote strengths of students / faculty / staff • Monitor academic activities of the department • Propose Department Budget • Maintain records of departmental activities and achievements
Administrative Officer	• Liasoning with AICTE, UGC and University • College roster • Faculty personal files • Maintain minutes of meeting (all) • New proposals • Co – ordinate day to day activities of office • Purchase process
Quality Management System (AR office)	• Establish, implement and maintain quality management system • Arranging internal audits • Maintain up-to-date master documents related to students. • Oversee Employee Attendance System & Maintain themonthly • Student attendance daily report • Maintaining updated building plans • Overall building maintenance
Admission Coordinator	• Propose admission policy • Arrange campaign regarding admission • Execute the admission process • Design and print admission brochure • Maintain and update college website • Maintain softcopy of photographs • Publicity of events
Alumni Association Coordinator	• Formation of student council (SC) • Arrange periodic meetings of SC • Ensure alumni registration • Prepare alumni news letter • Arrange Alumni meet • Proposing annual budget

Faculty Development Cell (under IQAC)	• Identifying training needs of employees • Notify the employees about various Employee Development programmes • Arrange Employee Development Programmes • Maintain training records
Placement Officer	• Liaison with industry • Student Training and Placement • Identify and provide for training needs of students • Arrange campus interviews • Proposing annual T & P budget
Library In-charge	• Plan and execute modus of routine activity of the library • Plan and propose expansion / development • Maintain library discipline and culture • Prepare annual budget for library
In-charge of Student Counseling Cell	• Facilitate career guidance to students • Assist students suffering from psychological disorders • Arrange for professional counselors • Maintain record of counseling activities • Student academic counseling • Provide slow-pace programme for weaker students • Arrange remedial classes for weaker students
Year wise Program Coordinator	• Central time table • Monitoring of lectures and practical • Conduction of internal examinations • Student's feedback • Collective attendance of students • Co-ordinate the activities of course faculty
Mentor	• Organize events through students' Club • Encourage student participation • Publication of technical magazine and news letters • Record of student participation and achievements in Co-curricular and extra – curricular activities • Maintain record of such events
Sports Coordinator	• Ensure smooth conduct of sports • Ensure proper use of indoor stadium • Mapping the college sports calendar to university calendar • Encourage students to participate in National/university level • Creation and upkeep of sports facilities

Service Rules, Procedures&Recruitment and Promotional Policies:

RULES GOVERNING SELECTION & PROMOTION OF TEACHING & NON-TEACHING EMPLOYEES:

Unless otherwise specified in the Acts and Statutes of the university or prescribed by the competent authority, the following rules shall be observed for selection and promotion of university employees:

I. **TEACHING EMPLOYEES**

A. **DIRECT RECRUITMENT:**

1. Unless otherwise stated by the concerned regulatory council and approved by the Executive Council of the university, all the faculty positions shall be classified as Professor, Associate Professor, and Assistant Professor.
2. The number of sanctioned posts in each college/ department shall be as approved by the Executive Council of the university.

3. The Executive Council shall also decide on the division of number of sanctioned posts in each college/ department among the positions/levels of Professor, Associate Professor, and Assistant Professor.
4. The minimum educational qualification and experience required for a particular post shall be in accordance with the rules of the related regulatory body and approved by the Executive Council of the university. However, the university may prescribe higher qualification and/or higher experience than the minimum qualification/experience prescribed by the concerned regulatory authority.
5. If the number of applicants is more than the number of posts available, the Vice Chancellor may fix criteria for screening and short listing of the candidates to be called for interview.
6. The Selection Committee shall comprise of the followings:

i. Vice Chancellor/Nominee of the Vice Chancellor – Chairperson
ii. Pro Vice Chancellor
iii. Dean of the Faculty
iv. Principal/ HOD
v. One Subject Expert in case of Assistant Professor, Two Subject Experts in case of Associate Professor or Professor, nominated by the Vice Chancellor
vi. One Nominee of the Society
vii. Registrar – Member Secretary

7. In case of non-availability of suitable candidate(s) for the particular post:

Selection Committee may recommend the appointment of appropriate number of candidates at the lower level(s).

OR

Selection Committee may recommend the vacancy to be filled through part-time and/or visiting faculty, or contract faculty.

OR

Selection Committee, if it deems fit, may recommend to offer a candidate an opportunity for certain period of time (to be decided by the Committee) as a part-time or visiting faculty before appointing on a regular basis.

8. The minimum educational qualification and experience in case of part-time, visiting faculty shall be the same as for the regular posts.
9. The selection committee may offer a higher/lower post to an applicant, if it deems proper.
10. The total remuneration/salary to be offered to a candidate shall be fixed by the Selection Committee at the time of interview. However, the same can be revised by the Vice Chancellor in compulsive circumstances, but before a candidate joins the services of the university.
11. In case, no candidate is found qualified as per Faculty Eligibility Criteria, a candidate may be offered a designation of Lecturer/Teaching Associate/ Tutor, as the case may be.
12. Except in case of Clause 8 above, a Principal/ HOD may recommend for the appointment of part-time/visiting/ contract/guest faculty for filling a temporary vacancy caused due to the leave etc. of a regular employee or till a regular post is created and approved by the competent authority. The Principal/HOD shall send the curriculum vitae of the proposed faculty through the Dean to the Vice Chancellor for approval and order.

B. **RECRUITMENT BY PROMOTION:**

1. No candidate shall be entitled to automatic promotion on acquiring the minimum eligibility.
2. The minimum eligibility, in addition to the fulfillment of requirements of Faculty Eligibility Criteria, shall also include that a candidate must have a consistent rating of at least 'GOOD' in his/her annual performance. The annual performance ratings being Excellent, Very Good, Good, Average, and Poor, starting with Excellent at the top.
3. Each case shall be examined on its merit by a duly constituted Selection Committee.
4. The process of recruitment by promotion shall be conducted only once in a year, provided there exist a vacancy and adequate number of suitably qualified candidates have applied for the purpose.
5. All the candidates, who are eligible and want to be considered for promotion, can apply to the Registrar before 30th June, enclosing documentary evidence in support of their claim.
6. The composition of Selection Committee for recruitment by promotion shall be the same as in case of direct selection.
7. It is desirable that 50% weightage be given to the cumulative annual performance appraisal scores of the candidate during his/her service in the university and 50% weightage to the interview/interaction with the applicant by the Selection Committee. A candidate is required to score at least 70% in total to be considered for promotion.
8. The candidates who have done significant/substantial research work of repute shall be placed higher in order of merit in the selection list.

II. **NON – TEACHING EMPLOYEES**

A. **DIRECT RECRUITMENT:**

1. The vacant non-teaching positions shall be filled in accordance with the ratio of direct vs. promotion ratio as laid down in the Recruitment Rules approved by the Executive Council of the university. The Rules are attached as **Annexure-I**.
2. The non-teaching activity of the entire university shall be divided into various divisions/sections on the basis of functional relevance and for increased efficiency, clarity, administrative convenience, and smooth functioning as per **Annexure-II**.
3. The minimum educational qualification and experience required for a particular post shall be in accordance with the Recruitment Rules approved by the Executive Council of the university.
4. The nomenclature of new appointments shall be in accordance with the approved Recruitment Rules.
5. The number of sanctioned posts in each college/department/division/section shall be as approved by the Executive Council of the university.
6. The Executive Council shall also decide on the allocation of sanctioned posts in each college/ department among various approved cadres/groups/levels.
7. If the number of applicants is more than the number of posts available, the Registrar may fix criteria for screening and short listing of the candidates to be called for interview.

8. The Selection Committee for recruitment to Group A & Group B posts shall comprise of the followings:

i. Vice Chancellor/ Nominee of the Vice Chancellor – Chairperson
ii. Two of the Directors/Principals/HODs to be nominated by the Vice Chancellor
iii. One Expert, nominated by the Vice Chancellor
iv. One Nominee of the Society
v. Registrar – Member Secretary

9. The Selection Committee for recruitment to Group C & Group D posts shall comprise of the followings:

i. Registrar – Chairperson
ii. Director/Principal/HOD concerned
iii. One Nominee of the Vice Chancellor
iv. Assistant Registrar (Establishment) – Member Secretary

10. The Selection Committee may offer a higher/ lower post to an applicant, if it deems proper.
11. In case of non-availability of suitable candidate(s) for the particular post, the Selection Committee may recommend the vacancy to be filled through temporary/adhoc appointment.
12. The total remuneration/salary to be offered to a candidate shall be fixed by the Selection Committee at the time of interview. However, the same can be revised by the Vice Chancellor in compulsive circumstances, but before a candidate joins the services of the university.
13. On the request of a Director/ Principal/ HOD, the Registrar may appoint a part-time/ contract/ temporary employee in case of an adhoc/urgent work/activity or till a regular post is created and approved by the competent authority, or for the purpose of filling a temporary vacancy caused due to the leave etc. of a regular employee.

B. **RECRUITMENT BY PROMOTION:**

1. No candidate shall be entitled to automatic promotion on acquiring the minimum eligibility.
2. Each case shall be examined on its merit by the duly constituted Departmental Promotion Committee (DPC).
3. The process of recruitment by promotion shall be conducted only once in a year, provided there exist a vacancy and adequate number of suitably qualified candidates have applied for the purpose.
4. All the candidates, who are eligible and want to be considered for promotion, can apply to the Registrar before 30th June, enclosing documentary evidence in support their claim.
5. It is desirable that 50% weightage be given to the service record of the candidate and 50% weightage to the interview/interaction with the applicant by the DPC. However, a candidate is required to score at least 70% in total to be considered for the purpose.
6. While examining the service record of a candidate, the following parameters shall be included viz. annual performance assessment, additional qualification(s) acquired, training/workshop etc. attended, any disciplinary proceeding undertaken or pending against the candidate, leave record, punctuality, complaints received against the candidate.
7. The composition of the DPC for Group A & Group B posts shall comprise of the followings:

i. Vice Chancellor/ Nominee of the Vice Chancellor – Chairperson
ii. Registrar
iii. Head of Institution/ Division/ Section

8. The composition of the DPC for Group C posts shall comprise of the followings:

i. Registrar/ Nominee of the Registrar – Chairperson
ii. Head of Institution/ Division/ Section
iii. Deputy/ Assistant Registrar

	TEERTHANKER MAHAVEER UNIVERSITY **MORADABAD – 244001 (U.P.)**

Table 10.1.3.3 : ELIGIBILITY CRITERIA FOR APPOINTMENT TO VARIOUS FACULTY POSITIONS

Discipline: Engineering		
Position	**Minimum Qualification**	**Desirable**
Assistant Professor	Bachelor and Master's Degree in the appropriate branch of Engineering/ Technology with at least First class at Bachelor's or Master's level.	• Teaching, research, industrial and / or professional experience in a reputed organization; • Research papers presented at Conferences and /or published in refereed journals

Associate Professor	1. Ph.D. Degree in relevant discipline with First Class at Bachelor's or Master's Degree in the appropriate branch of Engineering/ Technology 2. Eight years in teaching, research and / or industry at the level of Assistant Professor or equivalent grade, excluding period spent on obtaining the Ph.D. degree 3. Minimum 3 research publications in relevant area in refereed journals with at least one publication in last three years. ***In the event the candidate is from industry and the profession:*** 1. Bachelor and Master's Degree in the appropriate branch of Engineering/ Technology with at least First class at Bachelor's or Master's level. 2. Significant professional work which can be recognized as equivalent to a Ph.D. Degree in appropriate branch of Engineering/Technology, and industrial /professional experience of eight years in a position equivalent to the level of Assistant Professor.	• Teaching, research, industrial and / or professional experience in a reputed organization; • Published work, such as research papers, patents filed / obtained, books, and / or technical reports; • Experience of guiding the project work / dissertation of PG / Research Students or supervising R&D projects in industry. Provided that the recognition for significant professional shall be valid only if the same is recommended unanimously by a Three Member Committee of Experts appointed by the Vice-Chancellor of the University.
Professor	1. Fulfillment of minimum qualification as that of Associate Professor 2. Ten years in teaching, research and / or industry, out of which at least five years at the level of Associate Professor or equivalent grade. 3. Minimum 5 research publications in relevant area in refereed journals with at least two publications in last three years.	Same as in case of Associate Professor, plus • Demonstrated leadership in planning and organizing academic, research, industrial and / or professional activities; • Capacity to undertake/lead sponsored R&D, consultancy and related activities.

Table 10.1.3.4 : ELIGIBILITY CRITERIA FOR APPOINTMENT TO VARIOUS FACULTY POSITIONS:

Discipline: Computer Applications		
Position	**Minimum Qualification**	**Desirable**
Assistant Professor	1. Master's Degree in Computer Applications with minimum 60% marks. 2. NET/SLET/SET qualified or Ph. D degree in relevant discipline. **OR** B.Tech., M.Tech. (CS/IT) with minimum 60% marks.	1. Teaching, research, industrial and/or professional experience in a reputed organization 2. Papers presented at Conferences and/or published in refereed journals
Associate Professor	1. Master's Degree in Computer Applications with minimum 60% marks. **OR** B.Tech., M.Tech. (CS/IT) with minimum 60% marks. 2. Ph.D. degree in relevant discipline. 3. Eight years' experience in teaching and/or research in an academic/ research position equivalent to that of Assistant Professor in a University/College/Accredited Research Institution/industry excluding the period of Ph.D. 4. Minimum 3 research publications in relevant area in refereed journals with at least one publication in last three years.	Contribution to educational innovation, design of new curricula and courses, and technology – mediated teaching learning process with evidence of having guided doctoral candidates and research students.
Professor	1. Master's Degree in Computer Applications with minimum 60% marks. **OR** B.Tech., M.Tech. (CS/IT) with minimum 60% marks. 2. Ph.D. degree in relevant discipline. 3. Ten years of experience of teaching and/or research in an academic/ research institution with at least 5 yrs as Associate Professor or equivalent. 4. Minimum 5 research publications in relevant area in refereed journals with at least two publications in last three years.	Contribution to educational innovation, design of new curricula and courses, and technology– mediated teaching learning process with evidence of having guided doctoral candidates and research students.

Table 10.1.3.5 : ELIGIBILITY CRITERIA FOR APPOINTMENT TO VARIOUS FACULTY POSITIONS

Discipline: Humanities, Natural Sciences (Physics, Chemistry, Mathematics etc.) & Social Sciences (Languages, Economics, Political Science, Sociology, Psychology, etc.)		
Position	**Minimum Qualification**	**Desirable**
Assistant Professor	1. Master's Degree in relevant subject with minimum 55% marks. 2. NET/SLET/SET qualified or Ph. D degree in relevant discipline.	Good academic record preferably 60% or above marks at Master's or Bachelor's level with quality research publications.
Associate Professor	1. Master's Degree in relevant subject with minimum 55% marks. 2. Ph.D. degree in relevant discipline. 3. Eight years' experience in teaching and/or research in an academic/ research position equivalent to that of Assistant Professor in a University/ College/ Accredited Research Institution/ industry excluding the period of Ph.D. 4. Minimum 3 research publications in relevant area in refereed journals with at least one publication in last three years.	Contribution to educational innovation, design of new curricula and courses, and technology – mediated teaching learning process with evidence of having guided doctoral candidates and research students.
Professor	1. Master's Degree in relevant subject with minimum 55% marks. 2. Ph.D. degree in relevant discipline. 3. Ten years of experience of teaching and/or research in an academic/ research institution with at least 5 yrs as Associate Professor or equivalent 4. Minimum 5 research publications in relevant area in refereed journals with at least two publications in last three years.	Contribution to educational innovation, design of new curricula and courses, and technology – mediated teaching learning process with evidence of having guided doctoral candidates and research students.

Leave Detail:

Teerthanker Mahaveer University, Moradabad Leave Structure:

Table 10.1.3.6 : Leave Details

S.No.	Nature of Leave	Teaching	Non-Teaching Staff
1	Casual Leave	12	12
2	Academic/Special Casual Leave	10	Nil
3	Medical Leave	10	10
4	Earned Leave	Nil	15
5	Vacation Leave (Summer/Winter Breaks)	30	Nil
6	Compensatory Leave		As per explanatory note
7	Extra-ordinary Leave	Shall be without pay and shall not i. Exceed 3 months when service is < 3 years. ii. Exceed 6 months when service is > 3 but less than 6 years. iii. Exceed one year when service is > 6 years.	
8	Study Leave	As per explanatory note	

9	Maternity Leave	90 days each after 2 years of service with university and subject to a maximum for two surviving children.
10	Hospitalization Leave	Due to illness/injury of an employee on official duty and is allowed upto a maximum period of 3 months in any period of three years.

Regular Class IV employees of the university shall be entitled only for casual leave to the extent of six days in a calendar year.

Table 10.1.3.7 : Sanctioning Authority for various kind of leave

S. No.	Nature of Leave	Sanctioning Authority	
		Teaching Staff	Non-Teaching Staff
1	Casual Leave	Director/Principal	Reporting Authority
2	Academic/Special Casual Leave	Vice Chancellor	
3	Medical Leave	Registrar	Registrar
4	Earned Leave	Registrar	Registrar
5	Vacation Leave (Summer/Winter Breaks)	To be declared by the Director/Principal of the college with prior approval of the Vice Chancellor	
6	Compensatory Leave		Registrar
7	Extra-ordinary Leave	Vice Chancellor	Vice Chancellor
8	Study Leave	Vice Chancellor	
9	Maternity Leave	Registrar	Registrar
10	Hospitalization Leave	Registrar	Registrar

Notes:

1. Sanctioning Authority for all types of leave in case of Director/Principal of colleges would be the

Vice Chancellor.

2. Sanctioning Authority for casual leave for all the teaching and non-teaching staff in a college shall be the Director/Principal of the college concerned.
3. The record of all types of leave shall be maintained by the HR section of the university. However, offices of the Sanctioning Authority shall also maintain the leave records at their level.
4. Leave where approval of the Vice Chancellor/Registrar is required, the application must be forwarded through the Reporting Authority.

General Rules:

1. Leave cannot be claimed as matter of right. The sanctioning authority may refuse or revoke leave of any kind.
2. An employee on leave should not take up any service or employment elsewhere.
3. An employee who is on leave for more than three days on medical grounds will be permitted to return to duty only on production of a medical certificate of fitness. Leave sanctioning authority may secure second medical opinion if it is necessary.
4. Absence from duty after the expiry of leave renders an employee liable for disciplinary action.
5. An employee who absents himself/herself without prior sanction of leave shall be treated as absent and shall be subjected to disciplinary action.

6. No employee shall leave the station without the prior permission of the designated authority. He/she shall inform the authorities about his/her address during the days of absence.
7. In case an employee leaving the country during the leave period, sanction of the Vice Chancellor will be required, irrespective of the type or duration of leave.
8. All leave rules shall remain suspended once/after an employee submits his/her resignation or gets such a notice from the college/ university.
9. All leave shall be in reference to a calendar year, which stands for January 01 to December 31 of that year.

Explanatory Notes:

1. Casual Leave: An employee of the university shall be eligible to twelve days (12 days) casual leave in each calendar year. Casual leave cannot be carried forward to next year. In case of employee joining in middle of a year, the limit will proportionately be reduced by the competent authority. Casual leave is intended for a short time and cannot be granted more than three days at a time except under special circumstances. Casual leave cannot be combined with any other type of leave, but can be prefixed or suffixed with holidays and weekly-offs. However, a non- teaching staff is allowed to take half-day casual leave for the afternoon session only with the permission of competent authority.
2. Academic/Special Casual Leave

The Competent Authority may grant up to the limit of ten days (10 days) in a given calendar year leave of absence from duty to a member of the teaching staff to perform such duties as under:

a. To deliver academic lectures at a university or a college or any professional institution
b. To attend meetings of any committee/board constituted by university/ government/professional bodies.
c. To attend an academic conference/workshop/seminar etc.
d. To perform work of academic or technical nature such as evaluation of answers scripts or conduct of viva-voce. However, for this purpose maximum number of leave will be restricted to three.

Availing of such leave would be subject to the following conditions:

a. With prior approval from the competent authority on the recommendation of the college Director/Principal.
b. Submission of a copy of invitation letter from the host organization.
c. In case of paper presentation at a national or international conference, the faculty shall be required to submit a copy of the full text paper accepted at the time of taking approval for the study leave.

3. Medical Leaves: Regular employees of the university shall be eligible for ten days medical leave in a calendar year to meet out the requirement rising due to illness. For availing three or more medical leave, submission of medical certificate from registered medical practitioner is a must. This leave cannot be prefixed or suffixed with holidays and weekly-offs. Medical leave can be carried forward and accumulated to the extent of 90 days and are not cashable.
4. Earned Leave: Non vacation staff (staff that is not entitled for summer/winter vacation) shall be entitled for 15 days earned leave, which are admissible after one year of regular service. Earned leave can be accumulated up to 180 days. The maximum number of earned leave that can be granted in a calendar is sixty days only. Encashment of earned leave will be either on retirement or on resignation after two years of minimum service. Normally earned leave can be availed for a minimum three days at a time.
5. Vacation Leave: Faculty shall avail vacation leave in two spells i.e. summer and winter. Normally the duration of summer and winter vacation shall be as under:
    a. Winter Vacation: 10 days
    b. Summer Vacation: 20 days

The dates of commencement and duration of leave may be decided as per the requirement of thecollege with prior intimation to the Vice Chancellor. Teachers shall be given credit of leave in earned leave account for the vacation period in the ratio of 1:1, if detailed for official work by the competent authority during vacation. Such converted leave into earned leave account shall be governed by the earned leave rules for the non-vacation staff as stated above. For the faculty whose services are requisitioned during the vacation, the Principal/Director/HOD concerned shall seek the prior permission of the Vice Chancellor. Faculty on completion of one year of service in the University shall become eligible to avail vacation leave.

Director/Principal of colleges would be entitled for 30 days of earned leave in lieu of vacation leave.

6. Compensatory Leave: Non-teaching staff called to perform official duty on weekly-offs or public holidays shall be granted compensatory leave of equal number of days. However, if employee is called to clear the arrear of work for which he or she is personally responsible or is imposed as a penalty, no compensatory leave shall be granted under such situations. No compensatory leave shall be admissible to an employee who is paid TA & DA for that day(s). Such compensatory leave may be availed within one month of the entitlement otherwise same shall be treated as lapsed.
7. Extra-ordinary Leave: In case of genuine necessity and when no other leave is due, leave without pay may be granted subject to the conditions to be specified at the time of granting the leave.
8. Study Leave: A faculty member after completing five years of service with the university may be granted study leave with half pay and on execution of a bond to serve the university for another five years after availing such leave failing which he or she would be asked to deposit an amount equivalent full salary of the period for which study leave have been availed. Study leave can be granted to a faculty for a maximum period of 24 months in entire career with university. However, in exceptional cases it could be further extended to another 12 months to the satisfaction of the Competent Authority. Study leave shall be granted for acquiring higher qualification, if the additional qualification is considered to be in the interest of the college/ university.
9. Maternity Leave: Female employees after two years of their service with the university may be granted ninety days of maternity leave with half pay and is admissible to employees up to the second child. The leave can be combined with any other kind of leave. Maternity leave shall be granted only if supported by a medical certificate.
10. Hospitalization Leave: Hospital leave may be granted to an employee under medical treatment for illness or injury directly due to risk incurred in the course of his official duty. This concession will be available to such employee, the nature of whose duties exposes them to such illness or injury. Hospitalization leave may be granted up to a period of three months on full or half salary, as may be decided by the competent authority, in any period of three years.

Administrative Setup:

Table 10.1.3.8 : Functions of Various Bodies

Position	Functions

Governing Council	• Frame directive principles and policies • Amend and approve policies from time to time • Approve budgets
Principal	• Design & define organization structure • Define & delegate responsibilities of various positions in the organization • Ensure periodic monitoring & evaluation of various processes & sub-processes • Ensure effective purchase procedure • Define quality policy and objectives • Prepare annual budget • Conduct periodic meeting of various bodies such as Governing Council, Grievances Redressal Committee etc. • Manage accounts and finance • Employee recruitment process • Office Administration • Compliance with AICTE, UGC& University • Admission • Resource Generation • Internal and External examinations • Library Up gradation
Head of Department	• To discharge routine duty of Principal during absence of Principal • Annual/Bi-annual Magazine • Resource Provision • Alumni interaction • Prepare and execute academic calendar • Oversee the teaching-learning process • Carry out result analysis and submit corrective measures to Principal • Initiate supplementary teaching measures • Co-curricular activities • Formation of student council • Cultural activities • Sports activities • Student discipline • Student health care • Student orientation • Plan and execute academic activities of the department • Maintain discipline and culture in the department • Maintain the department neat and clean • Pick and promote strengths of students / faculty / staff • Monitor academic activities of the department • Propose Department Budget • Maintain records of departmental activities and achievements
Administrative Officer	• Liasoning with AICTE, UGC and University • College roster • Faculty personal files • Maintain minutes of meeting (all) • New proposals • Co – ordinate day to day activities of office • Purchase process

Quality Management System (AR office)	• Establish, implement and maintain quality management system • Arranging internal audits • Maintain up-to-date master documents related to students. • Oversee Employee Attendance System & Maintain themonthly • Student attendance daily report • Maintaining updated building plans • Overall building maintenance
Admission Coordinator	• Propose admission policy • Arrange campaign regarding admission • Execute the admission process • Design and print admission brochure • Maintain and update college website • Maintain softcopy of photographs • Publicity of events
Alumni Association Coordinator	• Formation of student council (SC) • Arrange periodic meetings of SC • Ensure alumni registration • Prepare alumni news letter • Arrange Alumni meet • Proposing annual budget
Faculty Development Cell (under IQAC)	• Identifying training needs of employees • Notify the employees about various Employee Development programmes • Arrange Employee Development Programmes • Maintain training records
Placement Officer	• Liaison with industry • Student Training and Placement • Identify and provide for training needs of students • Arrange campus interviews • Proposing annual T & P budget
Library In-charge	• Plan and execute modus of routine activity of the library • Plan and propose expansion / development • Maintain library discipline and culture • Prepare annual budget for library
In-charge of Student Counseling Cell	• Facilitate career guidance to students • Assist students suffering from psychological disorders • Arrange for professional counselors • Maintain record of counseling activities • Student academic counseling • Provide slow-pace programme for weaker students • Arrange remedial classes for weaker students
Year wise Program Coordinator	• Central time table • Monitoring of lectures and practical • Conduction of internal examinations • Student's feedback • Collective attendance of students • Co-ordinate the activities of course faculty

Mentor	• Organize events through students' Club • Encourage student participation • Publication of technical magazine and news letters • Record of student participation and achievements in Co-curricular and extra – curricular activities • Maintain record of such events
Sports Coordinator	• Ensure smooth conduct of sports • Ensure proper use of indoor stadium • Mapping the college sports calendar to university calendar • Encourage students to participate in National/university level • Creation and upkeep of sports facilities

10.1.4 Decentralization in working and grievance redressal mechanism (5) Institute Marks : 5.00

Decentralization in working and grievance redressal mechanism

Grievance Redressal Cell:

In order to promote a responsive and conducive academic environment on the campus, each College/Independent Teaching Department shall establish a **Students Grievance Redressal Cell**. The 'Cell' shall provide a friendly mechanism to the students to report their grievances and the faster disposal of the same. It shall also provide a platform to the students to come forward with constructive suggestions for more efficient and effective teaching-learning atmosphere

Further, the University has established a **Students Help Desk** at the Administrative Block with an objective of guiding the university students to the appropriate Office/Officer for addressing their queries or resolving a difficulty. The 'Help Desk' shall also advise the students about the procedure involved in the matter. It may also facilitate in resolving any grievance of a student remaining unattended at the College/Department level.

Objective

1. **Students' Help Desk**

   To guide a student about the procedure and officers/offices to be approached to address any query/grievance related to an academic or administrative matter.
   To co-ordinate with College/Department/Section/Division of the University in resolving the student's grievances.

2. **Students Grievance Redressal Cell**

   Providing a free and fair environment to students so that they can express their difficulties/problems without any apprehension.
   To ensure early and effective solution to a student's problem and provide/suggest ways and means so that such an issue does not arise in future.
   Counseling the students to maintain dignity and decorum, and to exercise restraint and patience as per demand of the situation.
   Ensuring friendly environment in the College/Department by promoting cordial Student-Student and Student-Staff relations.
   Training the staff to be more responsive, courteous, and service oriented.

College GrievanceCommittee

Table 10.1.4.1 : GrievanceCommittee

(i)	Prof R K Dwivedi Principal	Chairperson
(ii)	Prof R K Jain	Member
(iii)	Prof A K Saxena	Member

SCOPE:

The Students Grievance Redressal Cell shall strive to resolve all types of grievances of routine nature raised by the students of the respective College/Department, except those mentioned in the 'Exclusion' clause or the ones that infringe upon the working of any other Authority.

As such, the Cell shall deal with the following types of grievances/suggestions:

- **Academic:** Identity Card, Marks Sheet, Duplicate Marks Sheet, Migration Certificate, Enrollment number, Degree Certificate, Character certificate, Internal assessment, Attendance, Laboratory, Workshop
- **Financial:** Fee/Dues, Fine
- **Administrative:** Discipline, Transport, Security, and Information/Query
- **Hostel:** Accommodation, Services, Hygiene, Cleanliness, Food.

PROCEDURE TO FILE A GRIEVANCE/SUGGESTION:

- A student may approach the Students Grievance Redressal Cell in person and file her/his grievance/suggestion.
- The matter may also be reported through e-mail to the Chairperson of the Cell.
- A student may also drop the completed proforma in the Suggestion/ Grievance Box placed outside the Office to the respective Principal/HOD.
- A student can approach the Students' Help Desk for any grievance/suggestion related to other sections of the University, or regarding a grievance not settled by her/his College/Department.
- A student can also make use of the Suggestion/Complaint Box maintained at the Students' Help Desk for giving a suggestion or reporting a grievance.
- No student is allowed to file a grievance/suggestion on behalf of any other student.
- Incomplete proforma or anonymous proforma shall be summarily rejected.

COMPLAINT PROCESSING:

- Suggestion/Grievance Box maintained at the College/Department will be opened every Monday & Thursday by the Member Secretary of the Cell.
- In case of the University the Suggestion/Grievance Box shall be opened by an authorized representative of the Registrar.
- The Suggestions/Grievances so received shall be entered in serial order with a suffix S or G, as the case may, in the register maintained for the purpose. All grievances/ suggestions received by hand or email shall also be recorded in the same register in the order of their receipt at the concerned Cell/Desk.
- The Students Grievance Redressal Cell shall ensure urgent meeting(s) as are necessary to ensure early resolution of grievance(s), such that the students can find early solution to the difficulties faced by them, thus generating higher confidence into the system.
- It is desirable that the 'Cell' resolves all the issues within seven working days from date of its registering.
- The action taken with date against each grievance/suggestion shall be recorded in the above register.
- Minutes of meeting of the 'Cell' shall be maintained by the respective College/ Department.
- A monthly report of the above shall be sent to the office of the Registrar along with other monthly reports.

EXCLUSION:

The Students Grievance Redressal Cell or Students' Help Desk shall not entertain the grievance arising out of any of the following:

- Decisions of the Executive Council, Academic Council, University Court, Planning Board, Finance Committee.
- Decisions of the Board of Studies, Board of Faculty, any other Administrative or Academic Committees constituted by the University.
- Decisions taken by the University Authorities with regard to disciplinary matter and conduct of student.
- Decisions of the competent authority on assessment and examination results.

APPELLATE AUTHORITY & POWER TO REMOVE DIFFICULTIES:

- The Vice Chancellor of the University shall be the Appellate Authority, whose decision shall be final and binding on all.
- The Vice Chancellor shall also be the competent authority to remove any difficulty or ambiguity in interpretation and affecting these Rules.

Committee of Anti-Ragging Committee members (University Level):



TEERTHANKER MAHAVEER UNIVERSITY, MORADABAD

(Established under Govt. of U.P. Act No. 12, 2019)

UNIVERSITY ANTI-RAGGING COMMITTEE (2020-21)

SAY NO TO RAGGING

S.No.	Name	Designation	Mobile
1	Prof. Vipin Jain (Chief Proctor)	Chairperson	9917200216
2	Mr. Abhishek Kapoor, Director (Administration)	Member	9917100544
3	Mr. Vipin Jain (Chief Warden)	Member	9837763888
4	Dr. Manjula Jain, Associate Dean (Academics)	Member	6398245857
5	Dr. R.K. Dwivedi (Principal-CCSIT)	Member	9837771280
6	Dr. M.P. Singh, Director (Students Welfare & Cultural Affairs)	Member	9568162444
7	Dr. Seema Awasthi (Professor-Medical College)	Member	9838377779
8	Dr. Jyoti Puri (Associate Professor-TMIMT)	Member	9720767886
9	Mr. R.P. Gupta, Jt. Director (Security, Students Welfare & Administration)	Member	9639236666
10	Ms. Sushma Bhadoria (Manager-Girls Hostel)	Member	9927045580
11	Dr. Madhusudan (Hostel Warden)	Member	9837033001
12	Dr. Aditya Sharma (Registrar)	Member Secretary	9837933666

Note : Ragging related matter can be reported to any of the above officers.

HELP MAKE TMU RAGGING FREE

(Dr. Aditya Sharma)
Registrar

Figure 10.1.4.1 : Anti-Ragging Committee

Committee of Proctorial Board members (College Level):

Table 10.1.4.2 : Proctorial Board

S. No.	Name	Designation	Mobile No.
1	Prof. Rakesh Kr. Dwivedi	Principal	9837771280
2	Dr. Shambhu Bhardwaj	Proctor	7088782000
3	Dr. Shakti Kundu	Member	9927250409
4	Mr. Rupal Gupta	Member	9927040798
5	Dr Ashok Kumar	Member	9719991870
6	Mr. Jyoti Ranjan	Member	9911992661
7	Mr Abhilash Kumar	Member	9760940794
8	Ms Neeraj Kumari	Member	7500242444
9	Mr. Navneet Vishnoi-2	Member	9760642234
10	Ms. Ranjana Sharma	Member	8430835099

11	Dr. Zareen Farooq	Member	8433270955
12	Dr Ajay Kumar Upadhayay	Member	9455690465
13	Mr. Ankit Kumar Sharma	Member	9410047488
14	Mohd. Salman	Member	9634914214
15	Dr. Ashendra Kr. Saxena	First Information Person-I	9897529931
16	Mr. Manish Tiwari	First Information Person-II	9568516000

Committee of Anti-Ragging Committee members (College Level):

Table 10.1.4.3 : College level Anti-Ragging Committee

S. No.	Name	Designation	Mobile No.
1	Prof. Rakesh Kr. Dwivedi	Principal	9837771280
2	Dr. Shambhu Bharadwaj	Proctor	7088782000
3	Dr. Shakti Kundu	Member	9927250409
4	Mr. Rupal Gupta	Member	9927040798
5	Mr Abhilash Kumar	Member	9760940794
6	Ms. Neeraj Kumari	Member	7500242444
7	Ms. Ranjana Sharma	Member	8430835099
8	Dr. Ashendra Kr. Saxena	First Information Person-I	9897529931
9	Mr. Manish Tiwari	First Information Person-II	9568516000

In addition to the committees or bodies presented above, the college has the following committee:

Table 10.1.4.4 : Committees

PRINCIPAL	
PROF. RAKESH KUMAR DWIVEDI	
HEAD OF DEPARTMENT	
DR. GULISTA KHAN	
PRINCIPAL OFFICE MEMBERS	
MR. NIKHIL SAXENA	
MR. RAVINDRA P. SINGH	
AROFFICE MEMBERS	
AR OFFICE MEMBERS	MR. ABHISHEK SAXENA
	MR. MANAS RANJAN TRIPATHY
	MR. NITIN SHARMA
	MR. MANISH TIWARI

	MR. PRADEEP SHARMA
	MR. DINESH KUMAR
COORDINATORS	
PROF. R.C. TRIPATHI	GREAT LEARNING OLYMPUS/EDP
MR. RUPAL GUPTA	B.TECH. (CSE)
MR. PRADEEP KR SHAH	ERP
DR. ARPIT JAIN	JAIN AFFAIRS
DR. PARAG AGARWAL, DR. ASHOK KUMAR	RESEARCH COORDINATOR
MR. R.P. PANDEY	PROJECT COORDINATOR
MR. ASHISH BISHNOI	IIC
COLLEGE RESEARCH COMMITEE (CRC)	
PROF. R.K. DWIVEDI	CHAIRPERSON
DR. S.K. GUPTA	EXTERNAL MEMBER
DR. R.C. TRIPATHI	MEMBER
DR. RATTAN PAL SINGH RANA	MEMBER
DR. ASHENDRA KUMAR SAXENA	MEMBER
DR. PARAG AGARWAL	MEMBER
DR. AJIT KUMAR	MEMBER
DR. RAJEEV KUMAR	MEMBER
DR. SHAKTI KUNDU	MEMBER
DR. ASHOK KUMAR	MEMBER
MR. RUPAL GUPTA	MEMBER
DR. RAGHURAJ SINGH	EXTERNAL MEMBER
Dr. VIBHASH YADAV	EXTERNAL MEMBER
FACULTY/STAFF DEVELOPMENT PROGRAM COMMITTEE	
DR. ASHENDRA KUMAR SAXENA	COORDINATOR
MR. NAVNEET VISHNOI II	MEMBER
MR. RUPAL GUPTA	MEMBER
MR. NAMIT GUPTA	MEMBER
MR. PRIYANK SINGHAL	MEMBER
DR. RAJEEV KUMAR	MEMBER
INTERNAL QUALITY ASSURANCE CELL (Academic Quality Monitoring Committee):	
MEMBER NAME	DESIGNATION

PROF. RAKESH KUMAR DWIVEDI	DIRECTOR & PRINCIPAL (CHAIRPERSON)
MS. ANU SHARMA	COORDINATOR
MS. NEERAJ KUMARI	DY. COORDINATOR
TRAINING & PLACEMENT COMMITTEE	
MR.VIKRAM RAINA	ASSISTANT DIRECTOR T&P
DR. SHAKTI KUNDU	ACADEMIC COORDINATOR-I
DR. RAJEEV KUMAR	MEMBER
MR. TUSHAR MEHROTRA	MEMBER
MR. RATNESH SHUKLA	MEMBER
SEMINAR & WORKSHOP COMMITTEE	
DR. RAJEEV KUMAR	COORDINATOR
DR. ARPIT JAIN	DY. COORDINATOR
MR PRIYANK SINGHAL	MEMBER
CONFERENCE COMMITTEE	
PROF. RAKESH KR. DWIVEDI	CONFERENCE- GENERAL CHAIR
DR. ASHENDRA KUMAR SAXENA	CONFERENCE-CHAIR
PROF. R.C. TRIPATHI	CONFERENCE-CHAIR
DR. SHAKTI KUNDU	TECHNICAL CHAIR
DR. ARPIT JAIN	TECHNICAL CHAIR
DR. GULISTA KHAN	TECHNICAL CHAIR
DR. RAJEEV KUMAR	TECHNICAL CHAIR
MR. RUPAL GUPTA	PUBLICATION CHAIR
INDUSTRIAL VISIT/ STUDENT TOUR / INDUSTRY LINKAGE COMMITTEE	
MR. VIKRAM RAINA	COORDINATOR
DR. SHAKTI KUNDU	CO-COORDINATOR
MR. VIVEK KUMAR	MEMBER
MR. TUSHAR MEHROTRA	MEMBER
MR. RATNESH SHUKLA	MEMBER
DR. GULISTA KHAN	MEMBER
ALUMNI ASSOCIATION COMMITTEE	
MR. PRIYANK SINGHAL	PRESIDENT
MR. RUPAL GUPTA	VICE PRESIDENT
DR. RAJEEV KUMAR	EVENT COORDINATOR
MR. TUSHAR AGARWAL	MEMBER
MR. VIKRAM RAINA	SPECIAL INVITEE
DR. ASHENDRA KUMAR SAXENA	SPECIAL INVITEE

DR. SHAKTI KUNDU	SPECIAL INVITEE
LAB REVIEW & EXTERNAL PRACTICALS COMMITTEE	
MR. RUPAL GUPTA	COORDINATOR
MR. TUSHAR MEHROTRA	MEMBER
MR. RAJENDRA PRASAD PANDEY	MEMBER
LIBRARY COMMITTEE	
DR. Rupal Gupta	COORDINATOR
DR. KIRTI SHUKLA	MEMBER
MR. AJAY CHAKRAVARTY	MEMBER
INFRASTRUCTURECOMMITTEE	
MR. ABHISHEK SAXENA	COORDINATOR
MR. MANOJ KR GUPTA	CO-COORDINATOR
DR. ASHENDRA KUMAR SAXENA	MEMBER
MR. JABAR SINGH	BUILDING SUPERVISOR
WEB SITEDEVELOPMENT COMMITTEE	
MR. VIKRAM RAINA	COORDINATOR
MR. NIKHIL SAXENA	MEMBER
MR. SHRIKANT K. AGARWAL	MEMBER
MR. ALOK KUMAR	MEMBER
TIME TABLE AND DAILY REPORTCOMMITTEE	
DR. ARPIT JAIN	O/C IN CHARGE
MR. NAVNEET VISHNOI-2	DY. COORDINATOR
MR. RATNESH KUMAR SHUKLA	MEMBER
SHORT TERM COURSE & MOOCCOMMITTEE	
Implementation of Data	Prof. Rakesh Kumar Dwivedi
Science concepts using Julia	Mr. Priyank Singhal Mr. Rajendra Prasad Pandey Dr. Rajeev Kumar Mr. Rupal Gupta Ms. Hina Hashmi
Android Mobile Application Development	
Cisco	
PHP	
ORACLE	
Java Essential – The	
Professional Module	
Lets Play with Python	
Programming	
Graphics and Web Designing	

MONTHLY PROGRESS REPORTCOMMITTEE	
MR. PRIYANK SINGHAL	COORDINATOR 1
MR. RUPAL GUPTA	COORDINATOR 2
MR. SANDEEP SAXENA	MEMBER
WOMEN EMPOWERMENT CELL	
DR. GULISTA KHAN	COORDINATOR
DR. GARIMA GOSWAMI	MEMBER
DR. KIRTI SHUKLA	MEMBER
MS. ANU SHARMA	MEMBER
CULTURAL COMMITTEE	
MS. ANU SHARMA	COORDINATOR
MR. RATNESH SHUKLA	CO-COORDINATOR
DR ARPIT JAIN	MEMBER
SPORTS COMMITTEE	
MR. NAVNEET KR VISHNOI 2	COORDINATOR
MR. ABHISHEK SAXENA	MEMBER
MR. RUPAL GUPTA	MEMBER
NATIONAL SERVICE SCHEME (NSS)COMMITTEE	
MR. NAVNEET VISHNOI I	COORDINATOR
MR. JYOTI RANJAN LABH	CO-COORDINATOR
MR. MOHD. SALEEM	MEMBER
EVENT/ SOCIAL MEDIA/ PRINT MEDIA/ ELECTRONIC MEDIA	
DR. SANDEEP VERMA	COORDINATOR (PRINT MEDIA)
DR. SHAMBHU BHARADWAJ	CO-COORDINATOR
DR. RAJIV KUMAR	MEMBER (PRINT MEDIA)
MR. NIKHIL SAXENA	MEMBER (PRINT MEDIA)
ACADEMIC CALENDAR COMMITTEE	
PROF. RAKESH KR. DWIVEDI	COORDINATOR
DR. ASHENDRA KUMAR SAXENA	MEMBER
MR. VIKRAM RAINA	MEMBER
INSTITUTIONAL RANKING & FUNDING (UGC, MHRD, AICTE ETC.) COMMITTEE	
PROF. RAKESH KR DWIVEDI	COORDINATOR
DR. ASHENDRA KUMAR SAXENA	MEMBER
DR. RAJEEV KUMAR	MEMBER
DR. PARAG AGARWAL	MEMBER
MR. RUPAL GUPTA	MEMBER

DR. VIPIN KUMAR	MEMBER
PROJECT/TRAINING/PDC COMMITTEE	
MS. RASHMI JAIN	COORDINATOR
MR. RAJENDRA PRASAD PANDEY	DEPUTY COORDINATOR
PROF. RAKESH KR DWIVEDI	MEMBER
MR. PRIYANK SINGHAL	MEMBER
DR. ASHENDRA KR. SAXENA	MEMBER
RESULT ANALYSIS & PRINCIPAL EXCELLENCY AWARD	
DR. KIRTI SHUKLA	COORDINATOR
DR. ASHOK KUMAR	MEMBER
DR. ARPIT JAIN	MEMBER
MR. BRAHM DUTT GAUR	MEMBER
MR. VINAY PANT	MEMBER
MR. PRAFUL SAXENA	MEMBER
MR. BHARAT SHANKER PANDEY	MEMBER
MR. NITIN SHARMA	MEMBER
GATE EXAM PREPRATION COMMITTEE	
PROF. RAKESH KR. DWIVEDI	CHAIRPERSON
MR. RUPAL GUPTA	COORDINATOR
DR. ASHENDRA KUMAR SAXENA	MEMBER
DR. GOPAL	MEMBER
DR. AJIT SINGH	MEMBER
MR. TUSHAR MEHROTRA	MEMBER
DR. GULISTA KHAN	MEMBER
ACADEMIC REVIEW COMMITTEE	
PROF. RAKESH KR. DWIVEDI	COORDINATOR
DR. ASHENDRA KUMAR SAXENA	MEMBER
DR. VIPIN KUMAR	MEMBER
RESEARCH PUBLICATION, PATENT & INNOVATION COMMITTEE	
DR. ARPIT JAIN	COORDINATOR
MR. TUSHAR MEHROTRA	MEMBER
MS. HUMERA AQEEL	MEMBER
IIC	
DR. RAKESH KUMAR DWIVEDI	PRESIDENT
MR. PRADEEP K VERMA	CONVENER
MR. RAJENDRA PRASAD PANDEY	INTERNSHIP ACTIVITY

DR. RAJEEV KUMAR	STARTUP ACTIVITY

Roles & Responsibilities of Committees:

1. Internal Quality Assurance Cell (Academic Quality Monitoring Committee):

- To ensure meeting of all laid objectives under Teaching-Learning Process via conducting a fair and unbiased Academic Audit.
- To train faculty members on contemporary pedagogical practices.
- To conduct sessions on enhancing teaching effectiveness in the departments/institute via organization of workshops, seminars and demonstrations.
- To inculcate more opportunities towards Active learning through students' direct involvement in teaching-learning process.
- To raise benchmark of learning effectiveness through direct and indirect means of assessment.
- To motivate and assist teaching team towards developing skill sets in technical, pedagogical and emotional intelligence spheres.

2. Research & Development Committee:

- To manage faculty research evaluation / review scheme.
- To review project proposals for grants / sponsors.
- To manage the faculty research grants, publications and funds through consultancy.
- To develop facilities for research through collaboration / inter-disciplinary modes.
- To monitor student projects evaluation and review.
- To encourage students' projects and publications of their work.
- To publish institute research bulletin periodically.

3. Training & Placement Committee:

- To manage placements database.
- To organize skill development programs for students through internal & external experts.
- To ensure imparting proper training skills to the students by the trainers.
- To maintain data of students pursuing higher education.
- To organize periodical meets of alumni association.
- To publish placement data in institute website time to time.
- To arrange for carrier guidance.
- To enhance employability of students by empowering them withtechnical competencies,
- Domain Skills, leadership, techno-managerial qualities and communicative abilities to ensure they are industry ready.

4. Project/ Training/ PDC Committee

- To create a platform for industry institute interaction.
- To establish inter-relationship between Institute & Industry through know-hows and MoU's.
- To facilitate student/faculty internships at industries.
- To organize industrial visits for the students.
- To organize technical talks for the students from the industry experts.

5. NSS Committee

- Develop a sense of social and civic responsibility among students.
- Utilize student's knowledge in finding practical solution to individual and community problems.
- Acquire leadership qualities and democratic attitude.
- Develop community service attitude during emergencies and natural disasters

6. Cultural Committee

The Cultural Committee shall be responsible for all intra and inter collegiate cultural eventsin the Institute.

- To plan and schedule cultural events for the academic year.
- The Convener of the committee shall conduct a meeting of the committee to discuss and delegate tasks.
- To prepare the Annual Budget for various cultural events.
- To arrange the venue and logistics (audio/video system, dais, podium etc).
- Motivating students to participate in cultural events organized at university, national and international levels.
- Organizing cultural events for staff members.

7. Grievance Redressal Committee

- To address student grievances.
- To manage quality assurance of hostels & canteen.
- To monitor the house keeping work of the institute.
- To manage student's health care.

8. Anti-Ragging Committees

On receipt of the recommendation of the Anti-ragging squad or on receipt of any information concerned to the incident of ragging, Head of the Institution shall immediately determine whether a case under the penal laws could be out and if so, either on his own or through an authorized member of the Anti-Ragging Committee, shall proceed to file a First Information Report (FIR), within 24 hours of receipt of such information or recommendation with the police and local authorities, under the appropriate penal provisions relating to one or more of the following. Namely:

- Abetment to ragging
- Criminal conspiracy to ragging
- Unlawful assembly and rioting while ragging
- Public nuisance created during ragging
- Violation of decency and morals through ragging
- Injury to body, causing casual or grievous hurt
- Wrongful restraint
- Wrongful confinement
- Use of criminal force
- Assault as well as sexual offences or unnatural offences
- Extortion
- Criminal trespassing
- Offences against property
- Criminal intimidation
- Attempts to commit any or all of the above-mentioned offences against the victim(s)
- Threat to commit any or all of the above-mentioned offences against the victim(s).
- Other offences following from the definition of "Ragging".

9. Anti-ragging Squad

To create the awareness about Anti Ragging act and punishments among the students and the appropriate law in force.

- To create the awareness about Ragging constitutes (AICTE/UGC Regulation as per the directive of the Supreme Court Ragging CLAUSE 3).
- To prohibit, prevent and eliminate the scourge of ragging including any conduct by any student or students whether by words spoken or written or by an act which has the effect ofteasing, treating or handling with rudeness a fresher or any other student.
- To prohibit undisciplined activities by any student or students which causes or is likely tocause hardship or psychological harm or to raise fear in any fresher.

10. Anti-Sexual Harassment Squad

- To address student grievances.
- To manage quality assurance of hostels & canteen.
- To monitor the house keeping work of the institute.
- To manage student's health care.

10.1.5 Delegation of financial powers (5) Institute Marks : 5.00

(Institution should explicitly mention financial powers delegated to the Principal, Heads of Departments and relevant in-charges. Demonstrate the utilization of financial powers for each of the assessmentyears.)

The Board of Management is empowered to delegate any of its powers to the Vice Chancellor, Registrars, Finance Officer, Director/Principal, HoD of the University.

The Finance Committee of the University had approved the delegation of financial powers and the same was ratified by the Board of Management.

Table 10.1.5 Financial Authorities

Financial Power	Sanctioning authority
Upto Rs. 50,000	HoD
Upto Rs.1,00,000	Principal

10.1.6 Transparency and availability of correct/unambiguous information in public domain (5) Institute Marks : 5.00

Information about the institute, infrastructure, staff, students, equipment's and facilities are being hosted on the university website (www.tmu.ac.in) along with information of policies/procedures related to admission, academics, placement, and insurance. Our website displays the following rules and regulations:

- Eligibility and rules for admissions to degree course in CSE
- Criteria for admission as per AICTE Norms
- Rules for reservation
- Tuition Fees structure
- Cancellation of admission and refund of fees
- General rules students inside the campus
- Rules for NRI& JAIN students
- Rules for attendance
- Rules for examination
- Rules for detention
- Parent's corner
- Alumni corner
- Training & Placement corner
- Project Corner
- R&D Corner
- Grievance through online portal
- E-Contents and E-learning for students developed by faculty

10.2 Budget Allocation, Utilization, and Public Accounting at Institute level (15) Total Marks 15.00

:

Total Income at Institute level: For CFY,CFYm1,CFYm2 & CFYm3
CFY : (Current Financial Year),
CFYm1 : (Current Financial Year minus 1),
CFYm2 : (Current Financial Year minus 2) and
CFYm3 : (Current Financial Year minus 3)

Table 1 - CFY 2020-2021

Total Income 71196167				Actual expenditure(till...): 71096167			Total No. Of Students 514
Fee	Govt.	Grants	Other sources(specify)	Recurring including salaries	Non Recurring	Special Projects/Anyother, specify	Expenditure per student
71196167	0	0	0	68899663	2196504	-	82352

Table 2 - CFYm1 2019-2020

Total Income 103724671				Actual expenditure(till...): 103685772			Total No. Of Students 601
Fee	Govt.	Grants	Other sources(specify)	Recurring including salaries	Non Recurring	Special Projects/Anyother, specify	Expenditure per student
102724671	0	0	1000000	99045575	4640197	-	172522

Table 3 - CFYm2 2018-2019

Total Income 166623410				Actual expenditure(till...): 166426100			Total No. Of Students 675
Fee	Govt.	Grants	Other sources(specify)	Recurring including salaries	Non Recurring	Special Projects/Anyother, specify	Expenditure per student
166623410	0	0	-	90375417	76050683	-	246557

Table 4 - CFYm3 2017-2018

Total Income 82322000				Actual expenditure(till...): 81995403			Total No. Of Students 715
Fee	Govt.	Grants	Other sources(specify)	Recurring including salaries	Non Recurring	Special Projects/Anyother, specify	Expenditure per student
82322000	0	-	-	78252479	3742924	-	114679

Items	Budgeted in 2020-2021	Actual Expenses in 2020-2021 till	Budgeted in 2019-2020	Actual Expenses in 2019-2020 till	Budgeted in 2018-2019	Actual Expenses in 2018-2019 till	Budgeted in 2017-2018	Actual Expenses in 2017-2018 till
Infrastructure Built-Up	900000	810101	400000	0	70000000	68689011	1500000	0
Library	100000	68166	500000	336722	100000	373811	200000	381056
Laboratory equipment	600000	479980	2600000	2487000	200000	0	2200000	1992776
Laboratory consumables	100000	0	100000	0	100000	0	100000	0
Teaching and non-teaching sta	58000000	55962745	70000000	69131912	67000000	65275875	64000000	62597025
Maintenance and spares	2000000	1893283	15000000	14220611	3400000	3415133	3600000	3424797
R&D	500000	0	600000	185641	5000000	4703487	300000	157261
Training and Travel	100000	80434	300000	294789	600000	531910	500000	413714

Miscellaneous Expenses*	500000	488497	700000	627023	600000	570707	700000	698100
Others, specify	11000000	11312961	17100000	16402074	23000000	22866166	13000000	123330674
Total	73800000	71096167	107300000	103685772	170000000	166426100	86100000	81995403

10.2.1 Adequacy of budget allocation (5) Institute Marks : 5.00

The table below shows the adequacy of budget allocation:

Table 10.2.1 : Adequacy of budget allocation

S. No.	Assessment Year	Budget Allocated in Lakh(Rs.)	Actual Expenditure in Lakh(Rs.)	Adequate/ In-Adequate
1	CFY	73800000	71096167	ADEQUATE
2	CFYm1	107300000	103685772	ADEQUATE
3	CFYm2	170000000	166426100	ADEQUATE
4	CFYm3	86100000	81995403	ADEQUATE

10.2.2 Utilization of allocated funds (5) Institute Marks : 5.00

Table 10.2.2 : Fund Utilization Detail

S. No.	Assessment Year	Budget Allocated in Lakh (Rs.)	Actual Expenditure In Lakh (Rs.)	Percentage of Utilization
1	CFY	73800000	71096167	96.33
2	CFYm1	107300000	103685772	96.63
3	CFYm2	170000000	166426100	97.89
4	CFYm3	86100000	81995403	95.23

10.2.3 Availability of the audited statements on the institute's website (5) Institute Marks : 5.00

The Audited Account statement for F.Y. 2019-20 (Balance sheet) of the institution has been attached below.

TEERTHANKER MAHAVEER INSTITUTE OF MANAGEMENT & TECHNOLOGY, MORADABAD

Balance Sheet as at 31 March 2020

LIABILITIES		Amount(Rs.)	ASSETS		Amount(Rs.)
CORPUS FUND			**FIXED ASSETS**		
Opening Balance	3,677,251,100.11		Opening Gross Value		
Add: Donation/Fees	3,516,100.00		Addition during the year	9,823,657,929.14	
Add: Surplus During the Year	374,474,069.09	4,055,241,269.20		380,131,595.00	10,203,789,524.14
RESTRICTED FUNDS			**SECURITIES**		104,630,002.85
Vikrang Kalyan Fund		28,069.30			
Depreciation Fund		5,103,816,311.15	**CURRENT ASSETS, LOANS & ADVANCES**		
LOANS/BORROWINGS			Fee Receivables	111,640,698.23	
Secured Loans			Loans, Advances & Deposits	287,212,880.39	
		1,450,821,508.67	Other Current Assets	14,358,588.17	
			Bank Balances	87,958,047.65	
CURRENT LIABILITIES AND PROVISIONS			Cash in Hand	12,757,533.22	
		212,435,116.33			513,922,747.66
		10,822,342,274.65			10,822,342,274.65

FOR TEERTHANKER MAHAVEER INSTITUTE OF MANAGEMENT & TECHNOLOGY

(SURESH JAIN)
CHAIRMAN

PLACE: MORADABAD
DATED : 22-12-2020

AS PER OUR SEPARATE REPORT OF EVEN DATE ATTACHED

FOR SANDEEP VASH & ASSOCIATES
CHARTERED ACCOUNTANTS

SANDEEP K. VASH
(PROP.)
M. No. 085924
FRN. 510688C

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TEERTHANKER MAHAVEER INSTITUTE OF MANAGEMENT & TECHNOLOGY, MORADABAD

Income & Expenditure Account for the Year Ended on 31.03.2020

EXPENDITURE	Amount (Rs.)	INCOME	Amount (Rs.)
Salary Expenses	1,179,676,667.00	Tution & Other Receipts	3,164,403,881.31
Electricity/ Fuel	105,876,489.00		
Insurance	7,292,117.00		
Advertisement Expenses	77,386,054.00		
Interest on Term Loans from Bank	113,829,765.88		
Interest on OD Loans from Bank	17,757,711.86		
Interest on Unsecred Loan	395,753.00		
Bank Charges	6,417,995.17		
Hospital & Other Consumables	184,524,036.00		
Repair & Maintenance	210,907,415.00		
Legal & Professional Expenses	13,238,473.00		
Postage & Courier Charges	219,367.00		
Telephone Expenses	2,624,166.09		
Travelling & Conveyance Expenses	6,205,038.00		
Function & Seminar Exp.	942,440.36		
Honorarium & Guest Faculty Charges	2,376,894.00		
Books, Journals & Periodicals	3,626,329.00		
Student Training & Welfare	132,385,184.00		
Student Scholarships	77,156,328.00		
Examination Expenses	11,264,732.00		
Printing & Stationery	5,058,977.00		
Application & Affiliation Fees	4,612,977.00		
Security Expenses	4,895,635.00		
Miscelleneous Exps.	46,288,681.27		
Depreciation	574,970,586.59		
Excess of Income over Expenditure	374,474,069.09		
	3,164,403,881.31		3,164,403,881.31

AS PER OUR SEPARATE REPORT OF EVEN DATE ATTACHED

FOR TEERTHANKER MAHAVEER INSTITUTE OF MANAGEMENT & TECHNOLOGY

SURESH ARYA
(CHAIRMAN)

FOR SANDEEP VAISH & ASSOCIATES
CHARTERED ACCOUNTANTS

SANDEEP K. VAISH
(PROP.)
M. NO. 089359
FRN.: 510688C

PLACE: MORADABAD
DATED : 22-12-2020

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TEERTHANKER MAHAVEER INSTITUTE OF MANAGEMENT & TECHNOLOGY, MORADABAD

Delhi Road, Moradabad

Schedule of Income as on March 31, 2020

Particulars	Amount (Rs.)	Amount (Rs.)
Acadamic Receipts		2,854,492,275.00
Admission Test Fees	118,000.00	
Application for Admission Fees	3,991,000.00	
Fine Misc Fees	1,207,291.00	5,316,291.00
Hospital Receipts		
Hospital Receipts		269,283,142.00
PNB Rent		
PNB ATM Rent	120,000.00	
PNB Branch Rent	392,400.00	
PNB E-Lobby Rent	240,000.00	752,400.00
Bank Interest/Other Interest		
Interest form Sweep	233,446.00	
Interest form FDRs	22,718,857.00	
Bank Interest on S/B	749,019.00	
Bank Interest on UGC	8,852.00	
Interest from Income Tax (TDS)	273,520.01	23,983,694.01
Miscellaneous Receipts		
Misc. Receipts	9,741,779.30	
Interest on Electricity Security	834,300.00	10,576,079.30
Grand Total		3,164,403,881.31

Balance Sheet

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TEERTHANKER MAHAVEER INSTITUTE OF MANAGEMENT & TECHNOLOGY : MORADABAD

Detail of Fixed Assets for the year ending March 31, 2020

Assets	Rate of Dep.	As at 1.4.2019	Additions/(Deduction) From 1.4.2019 to 30.9.2019	Additions/(Deduction) From 1.10.2019 to 31.3.2020	As at 31.3.2020	Depreciation As at 1.4.2019	Depreciation For Current Period	Depreciation As at 31.3.2020	Written Down Value As at 1.4.2019	Written Down Value As at 31.3.2020
BLOCK'I'										
Land	N.A	324,322,977.00	-	-	324,322,977.00	-	-	-	324,322,977.00	324,322,977.00
BLOCK'II'										
Building	10%	6983237095.75	168,448,900.00	128,073,229.00	7,279,759,224.75	3,082,607,250.62	413,311,535.96	3,495,918,786.59	3,900,629,845.13	3,783,840,438.16
Furniture & Fixture	10%	619,425,228.15	12,813,316.00	6,324,347.00	638,562,891.15	311,299,230.74	32,410,148.69	343,709,379.43	308,125,997.41	294,853,511.72
		7,602,662,323.90	181,262,216.00	134,397,576.00	7,918,322,115.90	3,393,906,481.36	445,721,684.65	3,839,628,166.02	4,208,755,847.54	4,078,693,949.88
BLOCK'III'										
Equipment & Instruments	15%	756,357,271.00	3,521,820.00	11,827,373.00	771,706,464.00	449,114,530.00	47,501,737.13	496,616,267.12	307,242,741.00	275,090,196.88
Vehicles	15%	150,778,862.00	1,819,265.00	7,951,376.00	160,547,503.00	68,748,392.32	13,173,513.40	81,921,905.72	82,028,469.68	78,625,597.28
Library Books	15%	90,911,726.65	328,086.00	2,429,943.00	93,670,755.65	53,541,710.38	5,832,111.07	59,378,821.45	37,370,016.27	34,291,934.20
Other Equipments	15%	730,365,177.72	12,933,581.00	15,172,798.00	758,471,496.72	422,002,892.96	49,337,219.21	471,340,052.18	308,362,344.76	287,131,444.54
		1,728,411,037.37	18,603,752.00	37,381,430.00	1,784,396,219.37	993,407,465.66	115,843,580.81	1,109,257,046.47	735,003,571.71	675,139,172.90
BLOCK'V'										
Computer & Software	40%	168,361,590.87	4,850,358.00	3,636,265.00	176,848,211.87	141,531,777.53	13,396,321.13	154,931,098.67	26,829,813.34	21,917,113.20
		168,361,590.87	4,850,358.00	3,636,265.00	176,848,211.87	141,531,777.53	13,396,321.13	154,931,098.67	26,829,813.34	21,917,113.20
Total		9,823,457,929.14	204,716,326.00	375,415,269.00	10,203,589,526.14	4,528,845,724.56	574,970,586.58	5,103,816,311.15	5,294,813,204.58	5,099,973,212.98

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TEERTHANKER MAHAVEER INSTITUTE OF MANAGEMENT & TECHNOLOGY, MORADABAD

Schedules to Balance Sheet as on 31 March, 2020

Securities	Amount (Rs.)	
Bank of India		
FDR No. 780451000003396-MBA	9,229,024.72	
FDR No. 780451000004419-MCA	9,249,364.13	18,478,388.85
PNB Bagarpur		
FDR No. 601000PFR00000876-MDA	986,885.00	
FDR No. 601000PFR00000928-AMA	402,565.00	
FDR No. 601000PFR00001291-BTC	550,536.00	
FDR No. 601000PFR00001357-BTC	551,218.00	
FDR No. 601000PFR00001316-BTC	559,841.00	
FDR No. 601000PFR00001325-BTC	559,850.00	
FDR No. 601000PFR00001334-BTC	559,846.00	
FDR No. 601000PFR00001343-BTC	559,848.00	
FDR No. 601000PFR00001352-BTC	934,792.00	
FDR No. 601000PFR00001361-BTC	934,801.00	
FDR No. 601000PFR00001370-BTC	934,793.00	
FDR No. 601000PFR00001389-BTC	934,802.00	
FDR No. 601000PFR00001398-BTC	943,841.00	
FDR No. 601000PFR00001404-B.P.Ed	948,299.00	
FDR No. 601000PUR00000721-BTC	503,821.00	
FDR No. 601000PUR00000730-BTC	503,820.00	
FDR No. 601000PUR00000749-BTC	503,820.00	
FDR No. 601000PUR00000758-BTC	839,700.00	
FDR No. 601000PUR00000767-BTC	843,327.00	
IDR No. 601000PUR00000776-BTC	839,703.00	
FDR No. 601000PUR00005447	932,807.00	
FDR No. 601000PUR00005456	932,810.00	
FDR No. 601000PUR00005465	686,291.00	
FDR No. 601000PUR00005474	686,294.00	
FDR No. 601000PUR00005924	910,267.00	
FDR No. 601000PUR00005933	910,266.00	
FDR No. 601000PUR00005942	910,269.00	
FDR No. 601000PUR00005960	910,266.00	
FDR No. 601000PUR00005979	910,268.00	
FDR No. 601000PUR00005988	650,185.00	
FDR No. 601000PUR00005997	650,192.00	
FDR No. 601000PUR00006011	650,189.00	
FDR No. 601000PUR00006020	650,185.00	
FDR No. 601000PUR00006039	650,185.00	
FDR No. 601000PUR00006222	61,200.00	
FDR No. 601000PUR00006277	595,251.00	
FDR No. 601000PUR00006284	833,348.00	16,887,397.00
PNB IBB Basti-Nasir		
FDR No. 3942000AD00001370 (BG)	9,636,847.00	
FDR No. 3942000PD00001250 BG	141,430.00	
FDR No. 3942000PD00001269 BG	141,432.00	
FDR No. 3942000PD00001278 BG	141,434.00	
FDR No. 3942000PD00001287 BG	141,428.00	
FDR No. 3942000PD00001294 BG	141,435.00	
FDR No. 3942000PD00001302 BG	141,432.00	
FDR No. 3942000PD00001506	3,015.00	
FDR No. 3942000PRD00000422-MBA-(UPTU)	805,181.00	
FDR No. 3942000PRD00000431-MCA-(UPTU)	1,341,941.00	

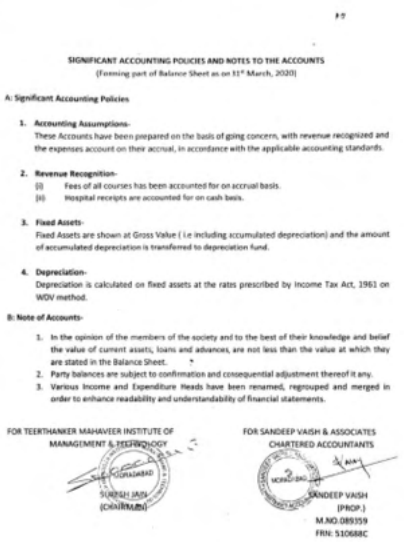
Page 1

FDR No. 394200PR00002677-Nursing	497,206.00	
FDR No. 394200PU00002571 BG	457,214.00	
FDR No. 394200PU00002711 BG	228,393.00	
FDR No. 394200PU00002720 BG	1,794,218.00	
FDR No. 394200PU00002739 BG	1,309,100.00	
FDR No. 394200PU00002748 BG	1,320,327.00	
FDR No. 394200PU00002757 BG	1,330,329.00	
FDR No. 394200PU00002766 BG	1,330,328.00	
FDR No. 394200PU00002775 BG	1,330,325.00	
FDR No. 394200PU00002784 BG	1,320,325.00	
FDR No. 394200PU00002809 BG	1,320,327.00	
FDR No. 394200PU00002818 BG	1,320,323.00	
FDR No. 394200PU00003941 BG	1,227,929.00	
FDR No. 394200PU00003950 BG	1,227,926.00	
FDR No. 394200PU00003969 BG	1,227,925.00	
FDR No. 394200PU00003978 BG	72,231.00	
FDR No. 394200PU00003987 BG	72,232.00	
FDR No. 394200PU00003996 BG	72,227.00	
FDR No. 394200PU00004001 BG	72,232.00	
FDR No. 394200PU00004010 BG	72,232.00	
FDR No. 394200PU00004834	196,855.00	
FDR No. 394200PU00004843	196,862.00	
FDR No. 394200PU00005693	24,346.00	
FDR No. 394200PU00005727	304,075.00	
FDR No. 394200PU00005736	304,080.00	
FDR No. 394200PU00005745	182,446.00	
FDR No. 394200PU00005754	182,446.00	
FDR No. 394200PU00005763	121,631.00	
FDR No. 394200PU00005772	121,632.00	
FDR No. 394200PU00005781	243,262.00	
FDR No. 394200PU00005790	243,261.00	
FDR No. 394200PU00005806	243,263.00	
FDR No. 394200PU00005879 BG	120,938.00	
FDR No. 394200PU00005888 BG	120,936.00	
FDR No. 394200PU00006498	114,980.00	
FDR No. 394200PU00006504	287,449.00	
FDR No. 394200PU00006771	10,648,431.00	
FDR No. 394200PU00006780	10,648,429.00	
FDR No. 394200PU00006799	1,120,887.00	
FDR No. 394200PU00006920	220,138.00	
FDR No. 394200PU00006939	165,107.00	
FDR No. 394200PU00006948	165,107.00	
FDR No. 394200PU00006957	385,248.00	
FDR No. 394200PU00006966	55,035.00	
FDR No. 394200PU00006975	165,107.00	
FDR No. 394200PU00006984	330,212.00	
FDR No. 394200PU00006993	110,071.00	
FDR No. 394200PU00007479	21,433.00	
FDR No. 394200PU00007798 BG	821,553.00	
FDR No. 394200PU00007804 BG	102,695.00	57,676,820.00
PNB Locshed		
FDR No. 3942013100000026-BTC		1,587,387.00
		104,630,002.85

Bank Accounts		
Axis Bank A/c 918010023807572	702,587.50	
HDFC Bank A/c 57500000345052	73.00	
YES A/c 87-199	156,411.62	
YES A/c 87-246	363.00	
PNB A/c 6010000100089458	336,912.83	
PNB A/c 6010000100089652	72,173,140.17	
PNB A/c 6010000100089847	1,467,563.80	
PNB A/c 6010002100000017	91,000.00	
PNB A/c 6010002100000026	82,800.00	
PNB A/c 6010002100000035	25,000.00	
PNB A/c 6010002100000044	25,000.00	
PNB A/c 6010002100000053	25,000.00	
PNB A/c 6010002100000071	604,139.20	
PNB A/c 6010002100001007	164,684.09	
PNB A/c39420121000010362	3,957,541.37	
PNB A/c 3942012100000116	2,641,644.91	
PNB A/c 6010002100000279	25,000.00	
PNB A/c 6010002100000321	158,615.63	
PNB A/c 3942002100004339	855,874.16	
PNB A/c 6010002100004473	1,319.39	
PNB A/c 3942002100004870	25,000.00	
PNB A/c 3942002100004889	25,000.00	
PNB A/c 3942002100004904	25,000.00	
PNB A/c 3942002100004913	698,000.00	
PNB A/c 3942002100004922	25,000.00	
PNB A/c 6010002100000050	48,839.86	
PNB A/c 6010002100007123	40,779.00	
PNB A/c 6010002100007169	25,000.00	
PNB A/c 21-8016	6,486.90	
PNB A/c 6010002100000808	14,168.09	
PNB A/c 6010002100000871	255,389.55	
PNB A/c 6010002100000996	636,018.60	
PNB A/c 3942005900000017	25,000.00	
PNB A/c 3942005900000026	25,000.00	
PNB A/c 6010000100003900	267,111.24	
PNB A/c 6010000100003379	46,751.04	
Yes Bank OD A/c 87-175	40,446.66	
PNB A/c 6010002100007141	24,468.00	
PNB A/c 6010002100007132	25,000.00	
PNB A/c 6010002100007150	25,000.00	
PNB A/c 6010002100000589	25,000.00	
PNB A/c 6010002100000543	25,000.00	
PNB A/c 6010002100000570	65,967.53	
PNB A/c 6010002100000552	24,911.30	
PNB A/c 6010002100000561	24,941.00	
HDFC Bank OD A/c 45100	1,996,097.03	87,958,047.65
OTHER CURRENT ASSETS		
TCS Receivable F.Y. 2016-17	128,694.00	
TCS Receivable F.Y. 2018-19	353,517.98	
TCS Receivable F.Y. 2019-20	56,930.00	
TDS Receivable F.Y. 2016-17	2,894,077.90	
TDS Receivable F.Y. 2018-19	3,133,053.79	

TEERTHANKER MAHAVEER INSTITUTE OF MANAGEMENT & TECHNOLOGY, MORADABAD
Schedules to Balance Sheet as on 31 March, 2020

		Amount (Rs.)
LOANS/BORROWINGS		
(a) SECURED LOANS:		
TERM LOANS		
Axis Bank Term Loan - 8252	514,263,145.00	
Axis Bank Term Loan- 0501	98,652,441.00	
PNB Term Loan-321	456,717,819.20	
PNB Term Loan-386	22,635,366.35	1,090,268,571.51
OVERDRAFT FACILITY		
PNB OD A/c 93-230	93,977,851.00	
PNB OD A/c 93-276	95,005,481.00	
PNB OD A/c 93-115	35,999,492.69	
PNB OD A/c 93-150	69,982,051.03	
Axis Bank OD A/c 7176	65,588,061.40	360,552,937.11
		1,450,821,508.67
CURRENT LIABILITIES & PROVISIONS		
Moradabad Shram Ayukt	95,539.00	
Refundable Fee	133,943.00	
Hospital Receivable	380,335.00	
Advance fees from Students	7,232,747.86	
Scholarship From Minority Dept Payable	257,933.00	
Samaj Kalyan Scholarship Refundable	373,625.00	
Scholarship Payable (Ph.D)	213,292.00	
Sundry Creditors	43,687,666.47	52,375,081.33
Security Payable		
Security from Faculty TMIMT	10,087,324.00	
Security from Hospital	50,000.00	
Refundable Security from KHFM	251,153.00	
Security From Students	48,126,400.00	
Pal Facility Management Services P.Ltd	100,000.00	58,614,877.00
Provisions		
TDS Payable	13,532,820.00	
ESI Payable	670,487.00	
P.F.Payable	1,876,623.00	
Salary Payable	80,181,487.00	
Salary Hold	5,072,125.00	
Expenses Payable	111,638.00	101,445,158.04
		212,435,116.31



SIGNIFICANT ACCOUNTING POLICIES AND NOTES TO THE ACCOUNTS
(Forming part of Balance Sheet as on 31st March, 2020)

A: Significant Accounting Policies

1. Accounting Assumptions-
These Accounts have been prepared on the basis of going concern, with revenue recognized and the expenses account on their accrual, in accordance with the applicable accounting standards.

2. Revenue Recognition-
(i) Fees of all courses has been accounted for on accrual basis.
(ii) Hospital receipts are accounted for on cash basis.

3. Fixed Assets-
Fixed Assets are shown at Gross Value (i.e including accumulated depreciation) and the amount of accumulated depreciation is transferred to depreciation fund.

4. Depreciation-
Depreciation is calculated on fixed assets at the rates prescribed by Income Tax Act, 1961 on WDV method.

B: Note of Accounts-

1. In the opinion of the members of the society and to the best of their knowledge and belief the value of current assets, loans and advances, are not less than the value at which they are stated in the Balance Sheet.
2. Party balances are subject to confirmation and consequential adjustment thereof it any.
3. Various Income and Expenditure Heads have been renamed, regrouped and merged in order to enhance readability and understandability of financial statements.

FOR TEERTHANKER MAHAVEER INSTITUTE OF MANAGEMENT & TECHNOLOGY

SURESH JAIN
(CHAIRMAN)

FOR SANDEEP VAISH & ASSOCIATES
CHARTERED ACCOUNTANTS

SANDEEP VAISH
(PROP.)
M.NO.085359
FRN: 510688C

Figure 10.2.3 : Audited Account statement

10.3 Program Specific Budget Allocation, Utilization (30) Total Marks 30.00

:

Total Income at Institute level: For CFY,CFYm1,CFYm2 & CFYm3
CFY: (Current Financial Year),
CFYm1 : (Current Financial Year minus 1),
CFYm2 : (Current Financial Year minus 2) and
CFYm3 : (Current Financial Year minus 3)

Table 1 :: CFY 2020-2021

Total Budget 28280000		Actual expenditure (till...): 1 28009650		Total No. Of Students 257
Non Recurring 1160000	Recurring 27120000	Non Recurring 1150106	Recurring 26859544	Expenditure per student 108987

Table 2 :: CFYm1 2019-202

Total Budget 27610000		Actual expenditure (till...): 1 27401667		Total No. Of Students 257
Non Recurring 3580000	Recurring 24030000	Non Recurring 3501742	Recurring 23899925	Expenditure per student 106621

Table 3 :: CFYm2 2018-2019

Total Budget 86432000		Actual expenditure (till...): 1 86130055		Total No. Of Students 257
Non Recurring 55420000	Recurring 31012000	Non Recurring 55220005	Recurring 30910050	Expenditure per student 335136

Table 4 :: CFYm3 2017-2018

Total Budget 22620010		Actual expenditure (till...): 1 22484475		Total No. Of Students 257
Non Recurring 3740010	Recurring 18880000	Non Recurring 3724386	Recurring 18760089	Expenditure per student 87488

Items	Budgeted in 2020-2021	Actual Expenses in 2020-2021 till	Budgeted in 2019-2020	Actual Expenses in 2019-2020 till	Budgeted in 2018-2019	Actual Expenses in 2018-2019 till	Budgeted in 2017-2018	Actual Expenses in 2017-2018 till
Laboratory equipment	500000	479980	2500000	2487000	400000	0	2000000	1992776
Software	800000	647097	1000000	844623	6300000	6203806	200000	1193102
Laboratory consumable	25000	0	25000	0	25000	0	25000	0
Maintenance and spares	800000	867630	600000	580331	1200000	1134748	700000	657520
R & D	400000	275365	500000	403785	600000	510089	700000	658762
Training and Travel	100000	64254	200000	234332	300000	312461	180000	174610
Miscellaneous Expenses*	25655000	25675324	22785000	22851596	77607000	77968951	18815010	17807705
Total	28280000	28009650	27610000	27401667	86432000	86130055	22620010	22484475

10.3.1 Adequacy of budget allocation (10) Institute Marks : 10.00

The budget is adequately allocated on different items and all the heads are given importance as per the regulation.

S.No.	Financial Year	Budgeted Expenditure	Actual Expenditure	Surplus/Deficit
1	2020-21	73800000	71096167	2703833
2	2019-20	107300000	103685772	3614228
3	2018-19	170000000	166426100	3573900
4	2017-18	86100000	81995403	4104597

10.3.2 Utilization of allocated funds (20)

Institute Marks : 20.00

The funds allocated on different items were utilized to extent.

S.No.	Financial Year	Budgeted Expenditure	Actual Expenditure	Surplus/Deficit
1	2020-21	73800000	71096167	2703833
2	2019-20	107300000	103685772	3614228
3	2018-19	170000000	166426100	3573900
4	2017-18	86100000	81995403	4104597

10.4 Library and Internet (20)

Total Marks 20.00

10.4.1 Quality of learning resources (hard/soft) (10)

Institute Marks : 10.00

Indicate whether zero deficiency report was received by the Institution for all the assessment years. Effective availability/purchase records and utilization of facilities/equipment etc. to be documented anddemonstrated)

UniversityLibrary

OVERVIEW

The University Library occupies a place of pride in Teerthanker Mahaveer University and is an essentialcomponent of the University's outstanding research and education mission. It serves as a creative and innovative partner in supporting teaching, learning, scholarship and research activities of the Institute. It is the liveliest place on the campus providing a conducive environment that enables learning and advancement of knowledge and promotes discovery and scholarship. The pleasant ambience and the well-furnished library with spacious reading rooms create an atmosphere of serenity and thereby inspire intellectual stimulation and research.

MISSION:

Central Library of Teerthanker Mahaveer University are stated as the following:

1. Academic library is dynamic instruments of education. They support the faculty in teaching and research programmes. The primary objective of the library is conservation and preservation of knowledge
2. Helping the faculty and students to achieve highest academic honor and lifetime good reading.
3. To educate and assist students and staff in the identification and effective use of information resources
4. To preserve all collections/materials and maintain/upgrade infrastructure to enhance the quality of services
5. To collect library materials in all formats, broaden and update all collections to meet the needs of programs and support teaching, research, innovation, and training
6. To automate complete function of all process of the library using ICT
7. To provide current library materials and databases that support academic curriculum.

OBJECTIVES:

1. To render excellent services of various types intune with the user needs and aspirations.
2. To develop a comprehensive and balanced collection of print and digital information resources related to educational & research programs.
3. To be accessible and responsive to its users by proactively trying to understand anticipate requirements
4. To inculcate information awareness among library users through the preparation of information services and instructional programs.
5. To establish and develop relation of communication and cooperation with other information institutions, at local, regional and international levels.

VISION:

The central library is the intellectual heart of Teerthanker Mahaveer University. It aspires for excellence insupport for the learning, teaching and research mission of the university with an aim:

- To evolve an ICT-driven world class academic and research library serving as an access point institution to global information resources and services in all subject fields.
- To create a Heritage Library consisting of conventional and digital resources of all published work of TMU scholars.
- To provide the most user - friendly environment for teaching, learning and research so that the University Library becomes the centre-piece of scholarly activities in the University system.
- To offer information services that are user-centered and instrumental to the advancement of teaching, learning, research and scholarship.
- To collaborate with faculty members in the common enterprise of knowledge generation, organization, preservation, and effective dissemination.
- To develop effective linkage mechanisms that enables the library's clientele to access information in other knowledge institutions both locally and internationally.

Library Advisory Committee (LAC)

The function of the Library Advisory Committee is to support the functioning of the library so that it can facilitate the library development plans by advocating the library development activities with the management. The purpose of the Library Advisory Committee is to act as a channel of communication and dialogue between the university library and its users. The committee's main objective is to aid in the establishment of a bridge between the library and the academic fraternity and the university management.

Table 10.4.1.1 : Members of LAC (Library Advisory Committee)

Prof. Raghuvir Singh, Vice Chancellor	Chairperson
Dr. Adity Sharma, Registrar	Member
Prof. Manjula Jain, Associated Dean	Member
Prof. (Dr.) M.P. Singh	Member
Prof. (Dr.) Shyamali Dutta	Member
Prof. (Dr.) R.K. Dwivedi	Member
Prof. (Dr.) Vipin Jain	Member
Prof. (Dr.) Manish Goel	Member
Prof. Shrinath Kulkarni	Member
Prof. Anurag Verma	Member
Dr. Manu Mishra	Member
Dr. Vineeta Jain	Member
Dr. Mohammad Nasir	Member (Secretary)

10.4.1DigitalLibrary:

Teerthanker Mahaveer University is completely connected with excellent Wi-Fi network. It has advanced IT facilitieswith adequate systems loaded with licensed Operating Systems and Software Packages. The network infrastructure is being served by HP Servers, Servers including Domain Controllers, DNS Servers, MailServer, Proxy Server, Database Server and Print Server. The power infrastructure is supported withheavy duty uninterrupted power supply for all systems and servers to avoid data loss. The students can access the following open online resources: -

- **Consortium for Educational Communication (CEC)** produced curriculum based and enrichment based (supplementary learning) educational video programmes for UG level covering major streams.
- **Learning Object repository (LOR)** multimedia contents based on FAQs on various topics to enhance the learning experience
- **Broadcasting Media** various educational programmes and contents via different media being broadcasted byCEC.
- **Vyas Higher Educational Channel** a 24x7 run channel broadcasts educational programmes on various subjects.
- **Swayam Prabha** a group of 32 DTH channels devoted to telecast high quality educational programmes.
- **e-PG Pathshala**the MHRD project for development/production of high quality, curriculum based, interactive E-content (course where) in 77 PG subjects across all disciplines.
- **E-Kalpa** a projection creating digital learning environment for design.

Electronic Databases & Online Journals

- **IEEE** is a gateway to trusted research-journals, conferences, standards, e-books and educational courses, to help the fuel imagination and inspire new ideas. It opens a world of knowledge from any industries to enable to improve or discover the next break through. With powerful search tools to find only the most relevant research and delivers the information that one requires.
- **Manupatra** is a legal research database for law. It covers Case Studies of Supreme Court & 21 High Courts, Case laws of other Courts (Federal Court, Lahore, Nagpur, Oudh, Peshawar, Privy Council, Rangoon & Sindh High Court)and other technical literature.

The statement showing year-wise procurement of text and reference books

Table 10.4.1.2 : Text and reference books statement

Books	Year	Text(No.)	Reference(N0.)
PhysicalBooks	2018-19	16820	1778
	2019-20	17295	1803
	2020-21	17390	1814
Total		**17390**	**1814**

Total no of books (Vol): 17390+1814=19,204

The University Library is a member of:

a. NationalDigitalLibrary
b. NPTEL
c. SWAYAM
d. MOOC
e. e-Shodhsindhu
f. ShodGanga
g. DELNET(Developing Network Library)

The University Library subscribes to the following e-databases with coverage of thousands of e-journals, conference proceedings, subject archives, etc.

Table 10.4.1.3 : Details of E-journals, Conference proceedings, Subject archives

S.No.	WebLinkofEBooks	Web Linkof E-Journals	Subscriptions ofdatasource-	Subscription ofSoftware Peryear
1	Manupatra	https://www.manupatra.com/ (http://www.manupatra.com/)	Manupatra	Rs1,77,000/-
2	EBSCO	www.ebscologin (http://www.ebscologin/)	Ebsco academic search elite	Rs. 3,47,750/-
3	IEEE	https://ieeexplore.ieee.org (https://ieeexplore.ieee.org/)	IEEE	Rs 20,000/-

4	DELNET	http://delnet.in/ (http://delnet.in/) 164.100.247.26	Delnet	Rs. 13,570/-

AccessibilitytoStudents:

With the fast-growing collection, both in digital and print form using the state-of-the-art facilities, the Library is contributing to the Universitys mission of becoming a world class Institution.The collection of the Library is rich and diverse, especially in terms of the breadth and depth of coverage. Collection encompasses subjects in:-

- Engineering and Technology
- Basic Sciences
- Humanities
- Business Management
- Commerce and Finance

This collection includes books, e/digitalbooks, research journals, conference proceedings, project reports, CDs etc. The library has committed itself to provide the best possible core collection.Itscollection development policy is formulated keeping in view of the University's mission statement and strategic plan in mind. It is linked very closely to the general and specific programs of the varsity and is in conformity with the information needs of the user population.

The rich collection of the library comprises of the following resources:

Table 10.4.1.4 : Library Resources

1.	Total no.of Books	**17390**
2.	(e-books) e-content available	486
3.	Totalno of Print & Electronic Journal e-Journal	14 Ebsco academic search elite
4.	Total no. of edata bases	02 Delnet, Ebsco database
5.	Total no.of CDs/DVDs	**389**
6.	Totalno.of ProjectReports	20

Area andSeating Capacity:

Total Area of the Libraries: 24263.1 sq.ft

Seating capacity: 321

Library Hours

The university library remains functional on all week days except for few national and gazetted holidays and remains open for 12 hours a day. The opening hours are further extended during the examination period.

Services Provided

The University library provides the following services to its users:-

- Orientation Programme
- Circulation Service
- Information Literacy
- User Education
- Reference and Information Service
- Electronic Database and Online-Journals
- Digital Archiving
- OPAC(Online Public Access Catalogue)
- Internet Facility
- Current Awareness Service
- Selective dissemination information service
- Lending Service
- Reprographic Service
- Information Exchange Service

Support to Student for self-learning activities

The University library provides excellent academic ambience for its users, ie.the faculty members, research scholars, students and other staff of the university, where they can access thousands of research and learning resources in print and online, and derive benefits from the libraries commitment of providing high quality resources and services.

The university library is an active member of many of the resource centers across the country being maintained and operated by MHRD, UGC etc. It also achieves maximum benefit from various programmes to its users. A brief write-up of such initiatives is furnished below:-

a. Member of **National Digital Library**, an MHRD initiative, with lakhs of online documents.
b. Maintaining the **Institutional Repository** that serves as showcase of output of academic pursuitsof its faculty members, research scholars and students.It also includes digital assets like datasets, administrative documents, course notes, learning objects, conference proceedings etc.
c. **DELNET** offers access to nearly 2.84 lakh records of books, periodicals, articles, thesis & dissertations and other databases. Besides this, it also provides Inter library Loan & document delivery Services to all its member libraries.

   Through Delnet, our university library coordinates with other regional, national and international networks and libraries, 6367 in number, for exchange of information and documents. The University Library, being an active member of this prestigious library network, has been be nefiting by accessing the global education and career opportunities.

d. **VIDWAN**, a premier database of profile of Scientists/Researcher and other faculty members working at leading Academic Institutions & other R&D organizations involved in Teaching & Research in India. It provides important information about experts background, contact address, experience, scholarly publication, skills, and accomplishments, research etc.
e. **MOOC** (Massive Open Online Courses) aimed at unlimited participation & open access via the web, it emerged as popular mode of learning and provides interactive courses with user forums to support community interactions among students and professors with immediate feedback to quick quizzes and assignments and promote reuse & remixing of resources.
f. **E Shodh Sindhu** (Consortium for Higher Education Electronic Resources) Provides access to e-resources to Universities, Colleges & CFTI (Centrally Funded Technical Institutions) and also provides current & archival access to more than 15000 core & peer-reviewed journals andnumber of full texts, bibliographic and factual databases. It bridges digital divide and move towards an information rich society. It monitors and promotes usage of e-resources through awareness and training programmes and provides access to scholarly contents in open access through subject portal and subject gateway.The university has started subscribing to databases in Engineering, Technology and Management disciplines through the recommended body by eShodhSindhu that takes care of the quality and other aspects.
g. **ShodhGanga**,is a platform for research students to deposit their PhD theses and makes it available to the entire scholarly community in open access.

   The full text of all the documents subscribed to by Shodh Ganga are available to read and to download in open access to the academic community worldwide. The repository has a collectionof 2,10,661 theses and 6123 synopsis. Online availability of electronic theses through centrally maintained digital repository will ensure easy access and archiving and also in raising the quality and standard of research.

   An MoU has been signed between the university and Inflibnet (a component of UGC) which hasmade it mandatory that all the theses for which a Doctor of Philosophy has been awarded by the university will become a part of ShodhGanga project and will be uploaded on its website to facilitate its contents being shared globally. Nearly10 theses leading to the PhD degrees, awarded by the university, have already been uploaded on the website of ShodhGanga.

   Shodh Gangotri the repository of ongoing research in the country would reveal the trends and directions of research being conducted and would avoid duplication of research.

   Plagiarism checks of Doctoral theses, Post Graduates/M.Phil dissertations and research articles using TURNITIN software.

10.4.2 Internet (10) Institute Marks : 10.00

10.4.2.1 Name of the Internetprovider:

BSNL/ National Knowledge Network (NKN)

10.4.2.2 Available bandwidth:

1Gbps /DEN network for backup with 100Mbps

10.4.2.3 Wi Fi availability:

Yes, in entire campus

10.4.2.4 Internet access in labs, classrooms, library and offices of all Departments:

Yes, everywhere

10.4.2.5 Security arrangements

The internet security in TMU campus is provided through Firewall1500D

Annexure I

(A) PROGRAM OUTCOME (POs)

Engineering Graduates will be able to:

1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

(B) PROGRAM SPECIFIC OUTCOME (PSOs)

Program should specify 2-4 program specific outcomes.

PSO1	Developing skills for creating computational solutions with emerging technologies, programming languages, mathematical foundations, algorithmic principles and open source platforms to solve complex engineering problems.
PSO2	Ability to understand the evolutionary changes in computing by applying standard practices and skills acquired through computer engineering to provide solutions with innovative ideas and interdisciplinary research.
PSO3	Ability to employ modern computer languages, environments, and platforms in creating innovative career paths to be an entrepreneur, and pursue higher studies in their respective domains.

Declaration

The head of the institution needs to make a declaration as per the format given -

- I undertake that, the institution is well aware about the provisions in the NBA's accreditation manual concerned for this application, rules, regulations, notifications and NBA expert visit guidelines inforce as on date and the institutes hall fully abide by them.
- It is submitted that information provided in this Self Assessment Report is factually correct.
- I understand and agree that an appropriate disciplinary action against the Institute willbe initiated by the NBA. In case, any false statement/information is observed during pre-visit, visit, postvisit and subsequent to grant of accreditation.

Head of the Institute
Name : Prof. Raghuvir Singh
Designation : Vice Chancellor
Signature :



Seal of The Institution :



Place : Moradabad
Date : 09-10-2021 16:26:21