NATIONAL BOARD OF ACCREDITATION

PART- A: Institutional Information

1. Name and Address of the Institution : BIRLA INSTITUTE OF TECHNOLOGY Vice Chancellor Birla Institute of Technology, Mesra Ranchi – Jharkhand (835215) India	
2. Type of Institution: Deemed University	
3. Year of Establishment of the Institution: 1955	
4. Ownership Status: Self-financing	
5. Name and address of Affiliating University (if any): Not applicable	
6. Other Academic Institutions of the Trust/Society/Company etc., if any: Not applicable	

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	Initial Intake	Intake Increase	Current Intake	Accreditation Status	From	To	Program for considerat	Program for
Bachelor of Technology (Biotechnology)	UG	2002	2002	60	No	60	Granted provisional accreditation for two years for the period	2016	2018	Yes	4
Chemical Engineering	UG	2011	2021	60	Yes	120	Granted accreditation for 3 years for the period	2022	2025	Yes	4
Food Engineering and Technology	UG	2023	2023	30	No	30	Not eligible for accreditation	--	--	No	4
Chemical Engineering (Plastic & Polymer)	UG	2011	2013	30	Yes	60	Program merged with B. Tech in Chemical Engineering	--	--	No	4

Bachelor of Architecture	UG	1993	1993	40	No	40	Not eligible for accreditation	--	--	No	5
Master of Computer Applications	PG	1984	1984	60	Yes	160	Granted provisional accreditation for two years for the period	2016	2018	No	2

Sanctioned Intake for Last Five Years for the Master of Computer Applications

Academic year	**Sanctioned Intake**
2025-26	160
2024-25	160
2023-24	60
2022-23	60
2021-22	60

Master of Technology (Biotechnology)	PG	2010	2010	18	No	18	Granted provisional accreditation for two years for the period	2016	2018	No	2
Master of Technology (Aerospace Engineering)	PG	1968	1968	12	Yes	24	Eligible but not applied	--	--	No	2

Sanctioned Intake for Last Five Years for the Master of Technology (Aerospace Engineering)

Academic year	**Sanctioned Intake**
2025-26	24
2024-25	24
2023-24	24
2022-23	24
2021-22	12

Bachelor of Technology (Artificial Intelligence and Machine Learning)	UG	2022	2022	60	No	60	Not eligible for accreditation	--	--	No	4
Bachelor of Technology (Civil Engineering)	UG	1957	1957	60	No	60	Granted accreditation for 3 years for the period	2026	2028	No	4
Master of Technology (Civil Engineering)	PG	2024	2024	30	No	30	Not eligible for accreditation	--	--	No	2
Bachelor of Technology (Computer Science and Engineering)	UG	1983	1983	60	Yes	180	Granted accreditation for 3 years for the period	2026	2028	No	4
Master of Technology (Computer Science and Engineering)	PG	1999	1999	16	Yes	30	Granted accreditation for 3 years for the period	2020	2023	no	2

Sanctioned Intake for Last Five Years for the Master of Technology (Computer Science and Engineering)

Academic year	**Sanctioned Intake**
2025-26	30
2024-25	30
2023-24	30
2022-23	30
2021-22	16

Master of Technology - Computer Science and Engineering (Artificial Intelligence and Machine Learning)	PG	2021	2021	18	Yes	30	Eligible but not applied	--	--	No	2

Sanctioned Intake for Last Five Years for the Master of Technology -Computer Science and Engineering (Artificial Intelligence and Machine Learning)

Academic year	Sanctioned Intake
2025-26	30
2024-25	30
2023-24	30
2022-23	30
2021-22	18

Master of Technology (Electrical Engineering)	PG	2022	2022	30	No	30	Eligible but not applied	--	--	No	2
Bachelor of Technology (Electrical and Electronics Engineering)	UG	1965	1965	60	Yes	90	Granted accreditation for 3 years for the period	2023	2026	No	4

Sanctioned Intake for Last Five Years for the Bachelor of Technology (Electrical and Electronics Engineering)

Academic year	Sanctioned Intake
2025-26	90
2024-25	60
2023-24	60
2022-23	60

2021-22	60										
Bachelor of Technology (Electronics and Communication Engineering)	UG	1960	1960	45	Yes	180	Granted accreditation for 3 years for the period	2023	2026	No	4

Sanctioned Intake for Last Five Years for the Bachelor of Technology (Electronics and Communication Engineering)

Academic year	**Sanctioned Intake**
2025-26	180
2024-25	180
2023-24	180
2022-23	120
2021-22	120

Master of Technology (Electronics and Communication Engineering)	PG	2022	2022	30	No	30	Eligible but not applied	--	--	No	2
Master of Technology (Mechanical Engineering)	PG	2022	2022	24	No	24	Eligible but not applied	--	--	No	2
Bachelor of Technology (Mechanical Engineering)	UG	1955	1955	120	No	120	Granted accreditation for 3 years for the period	2023	2026	No	4

Bachelor of Technology (Production and Industrial Engineering)	UG	1964	1964	60	No	60	Granted accreditation for 3 years for the period	2023	2026	No	4
Master of Technology (Remote Sensing)	PG	1997	1997	18	Yes	24	Granted accreditation for 3 years for the period	2023	2026	No	2

Sanctioned Intake for Last Five Years for the Master of Technology (Remote Sensing)

Academic year	Sanctioned Intake
2025-26	24
2024-25	24
2023-24	24
2022-23	24
2021-22	18

Master of Urban Planning	PG	2007	2007	20	No	20	Not eligible for accreditation			no	2
Master of Technology (Production and Industrial Engineering)	PG	1992	1992	12	No	12	Eligible but not applied			no	2
Bachelor of Hotel Management and Catering Technology	UG	2003	2003	60	Yes	30	Eligible but not applied			no	4

Sanctioned Intake for Last Five Years for the Bachelor of Hotel Management and Catering Technology

Academic year	Sanctioned Intake
2025-26	30

2024-25	30										
2023-24	30										
2022-23	30										
2021-22	60										
Master of Business Administration	PG	1980	1980	120	Yes	220	Granted accreditation for 3 years for the period	2023	2026	no	2
Sanctioned Intake for Last Five Years for the Master of Business Administration											
Academic year	**Sanctioned Intake**										
2025-26	220										
2024-25	220										
2023-24	120										
2022-23	120										
2021-22	120										
Master of Pharmacy (Pharmaceutical Chemistry)	PG	1983	1983	6	Yes	15	Eligible but not applied	--	--	No	2
Master of Pharmacy (Pharmaceutical Quality Assurance)	PG	2011	2011	15	No	15	Eligible but not applied	--	--	No	
Master of Pharmacy (Pharmacognosy)	PG	1998	1998	6	Yes	15	Eligible but not applied	--	--	No	
Master of Pharmacy (Pharmacology)	PG	1998	1998	6	Yes	15	Eligible but not applied	--	--	No	

Master of Pharmacy (Pharmaceutics)	PG	1983	1983	6	Yes	15	Eligible but not applied	--	--	No	
Bachelor of Pharmacy	UG	1972	1972	60	no	60	Granted accreditation for 3 years for the period	2023	2026	No	4
Integrated Master of Science (Physics)	PG	2008	2008	40	No	30	Not eligible for accreditation	--	--	No	5
Integrated Master of Science (Mathematics and Computing)	PG	2011	2011	40	Yes	60	Not eligible for accreditation	--	--	No	5
Integrated Master of Science (Quantitative Economics and Data Science)	PG	2021	2021	30	No	30	Not eligible for accreditation	--	--	No	5
Master of Science (Biotechnology)	PG	2014	2014	30	No	30	Not eligible for accreditation	--	--	No	2
Master of Science (Physics)	PG	2008	2008	15	No	15	Not eligible for accreditation	--	--	No	2
Master of Science (Geoinformatics)	PG	2006	2006	15	No	15	Not eligible for accreditation	--	--	No	2

Master of Science (Chemistry)	PG	2009	2009	15	No	15	Not eligible for accreditation	--	--	No	2
Master of Science (Environmental Science and Management)	PG	2024	2024	30	No	30	Not eligible for accreditation	--	--	No	2
Integrated Master of Business Administration	PG	2024	2024	60	No	60	Not eligible for accreditation	--	--	No	5
Master of Technology (Electric Vehicle Technology)	PG	2022	2022	18	Yes	30	Not eligible for accreditation	--	--	No	2

Sanctioned Intake for Last Five Years for the Master of Electric Vehicle Technology	
Academic year	**Sanctioned Intake**
2025-26	30
2024-25	30
2023-24	30
2022-23	30
2021-22	18

Bachelor of Computer Applications	UG	1998	1998	200	No	200	Not eligible for accreditation	--	--	No	3
Bachelor of Business Administration	UG	1998	1998	200	No	200	Not eligible for accreditation	--	--	No	3

Bachelor of Science (Chemistry)	UG	2023	2023	30	No	30	Not eligible for accreditation	--	--	No	4
Diploma in Computer Engineering	Diploma	2002	2002	30	Yes	60	Granted accreditation for 3 years for the period	2023	2026	No	3

Sanctioned Intake for Last Five Years for the Diploma in Computer Engineering

Academic year	**Sanctioned Intake**
2025-26	60
2024-25	30
2023-24	30
2022-23	30
2021-22	30

Diploma in Electronics and Communication	Diploma	2001	2001	30	No	30	Granted accreditation for 3 years for the period	2023	2026	No	3
Diploma in Automobile Engineering	Diploma	2001	2001	30	No	60	Eligible but not applied	--	--	No	3
Diploma in Electrical and Electronics Engineering	Diploma	2010	2010	30	Yes	60	Eligible but not applied	--	--	No	3
Diploma in Mechanical Engineering	Diploma	2010	2010	60	Yes	90	Eligible but not applied	--	--	No	3

Sanctioned Intake for Last Five Years for the Diploma in Mechanical Engineering

Academic year	**Sanctioned Intake**

2025-26	90										
2024-25	90										
2023-24	90										
2022-23	90										
2021-22	60										
Diploma in Civil Engineering	Diploma	2025	2025	30	No	30	Not eligible for accreditation	--	--	No	30

8. Programs to be considered for Accreditation vide this application:

S No	Level	Discipline	Program
1	Under Graduate	Engineering & Technology	Chemical Engineering
2	Under Graduate	Engineering & Technology	Biotechnology

9. Total Number of Faculty Members in Various Departments:

Number of faculty members in the Department (UG and PG)													
		AY 2025-26 (till 15 Dec 2025) (CAY)				AY 2024-25 (CAYm1)				AY 2023-24 (CAYm2)			
ID	Name of the Department	No. of Professors	No. of Associate Professors	No. of Assistant	Total Faculty Members	No. of Professors	No. of Associate	No. of Assistant	Total Faculty Members	No. of	No. of Associate	No. of Assistant	Total Faculty Members
1	Bioengineering & Biotechnology	8	2	10	20	8	2	10	**20**	5	4	11	**20**
2	Chemical Engineering	3	2	20	25	3	2	18	**23**	3	2	16	**21**
3	Civil and Environmental Engineering	1	4	9	14	5	5	8	**18**	7	5	6	**18**
4	Computer Science & Engg.	4	12	30	46	4	12	25	**41**	3	9	28	**40**
5	Electrical and Electronics Engineering	2	2	16	20	4	12	31	**47**	3	9	28	**40**
6	Electronics & Communication Engg	5	3	21	29	3	2	17	**22**	3	0	15	**18**
7	MANAGEMENT	8	3	37	48	5	2	16	**23**	5	1	12	**18**
8	Mechanical Engineering	3	2	21	26	4	2	19	**25**	2	3	19	**24**

9	Pharmaceutical Sciences & Technology	5	3	12	20	5	4	13	**22**	6	4	11	**21**
10	PRODUCTION and INDUSTRIAL ENGINEERING	3	4	9	16	3	4	9	**16**	2	4	11	**17**
11	Remote Sensing	3	4	1	8	3	3	1	**7**	3	3	1	**7**
12	Space Engineering and Rocketry	1	1	5	7	1	1	4	**6**	1	0	5	**6**

10. Total Number of Engineering Students in Various Departments

Name of the Department	2025-26 (CAY)	2024-25 (CAYm1)	2023-24 (CAYm2)
Bioengineering & Biotechnology	253	159	143
Chemical Engineering	582	462	404
Civil and Environmental Engineering	249	256	241
Computer Science & Engg.	1282	1215	1098
Electrical and Electronics Engineering	334	311	330
Electronics & Communication Engg	830	733	650
Mechanical Engineering	533	528	504
PRODUCTION and INDUSTRIAL ENGINEERING	209	195	180
Remote Sensing	12	15	14
Space Engineering and Rocketry	31	16	6

11. Vision of the Institution:

To become a globally recognized academic institution in consonance with the social, economic, and ecological environment, striving continuously for excellence in education, research and techno-logical service to the national needs.

12. Mission of the Institution:

- To educate students at Undergraduate, Postgraduate, Doctoral and Post Doctoral levels to perform challenging engineering and managerial jobs in industry
- To provide excellent research and development facilities to take up Ph.D programmes and research projects
- To develop effective teaching and learning skills and state-of-the-art research potential of the faculty

- To build national capabilities in technology, education and research in emerging areas
- To provide excellent technological services to satisfy the requirements of the industry and overall academic needs of society

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

Head of the Institution

Name	Indranil Manna
Designation	Vice Chancellor
Mobile No.	8127884422
Email ID	vc@bitmesra.ac.in

NBA Coordinator, if designated

Name	Animesh Ghosh
Designation	Director IQAC
Mobile No.	9007175618
Email ID	dir.iqac@bitmesra.ac.in

PART B: Criteria Summary

1 OUTCOME-BASED CURRICULUM (120)

1.1. Vision, Mission and Program Educational Objectives (PEOs) (35)

(Provide details of vision and mission and program educational objectives.)

1.1.1. State the Vision and Mission of the Institute and the Department (5)

(Vision statement typically indicates aspirations and Mission statement states the broad approach to achieve aspirations.)

<table>
<tr><td>Vision of the institute</td><td>To become a globally recognized academic institution in consonance with the social, economic, and ecological environment, striving continuously for excellence in education, research, and technological service to the National needs.</td></tr>
<tr><td>Mission of the institute</td><td>• To educate students at Undergraduate, Postgraduate, Doctoral, and Post-Doctoral levels to perform challenging engineering and managerial jobs in industry.
• To provide excellent research and development facilities to take up Ph.D. programmes and research projects.
• To develop effective teaching and learning skills and state-of-the-art research potential of the faculty.
• To build national capabilities in technology, education, and research in emerging areas.
• To provide excellent technological services to satisfy the requirements of the industry and overall academic needs of society.</td></tr>
<tr><td>Vision of the Department</td><td>To be a Centre of Excellence for the provision of effective teaching/learning, skill development and research in the areas of Chemical Engineering and allied areas through the application of Chemical Engineering principles.</td></tr>
<tr><td>Mission of the Department</td><td><table><tr><th>Mission No.</th><th>Mission Statements</th></tr><tr><td>M1</td><td>To educate and prepare graduate engineers with critical thinking skills in the areas of chemical engineering who will be the leaders in industry, academia, and administrative services both at national and international levels.</td></tr><tr><td>M2</td><td>To inculcate fundamental knowledge base in undergraduate students which enable them to carry out post-graduate study, do innovative interdisciplinary doctoral research and to be engaged in long-life learning.</td></tr><tr><td>M3</td><td>To train students in addressing the challenges in chemical, petrochemical, polymer and allied industries by developing sustainable and eco-friendly technologies.</td></tr></table></td></tr>
</table>

1.1.2. State PEOs of the Program (5)

(State the PEOs (3 to 5) of program seeking accreditation.)

PEO No.	Program Educational Objectives Statements
PEO1	To understand and apply working knowledge of chemical engineering principles in independent research and development.
PEO2	To implement the inter-perceptional skills of individuals in technical profession.
PEO3	To prepare students for employment in industries such as, chemical, petroleum, and allied chemical industries.
PEO4	To update technical know-how by self-learning besides learning a great deal by associating with professional bodies and alumni.
PEO5	To develop an ability to succeed in the graduate competitive examinations and pursue higher studies in chemical engineering or lateral disciplines.

1.1.3. Process of Defining Vision, Mission and PEOs (10)

(Articulate the process involved in defining the Vision and Mission of the department and PEOs of the program.)

Following are the steps in the process for defining Vision, Mission and PEOs of the Department.

STEP I: A series of meetings was held and all faculty members of Department of Chemical Engineering deliberated, considering the following and prepared a Draft copy for vision, Mission and PEOs of Chemical Engineering:

- Institute Vision and Mission,
- Feedback from Profession Bodies like Indian Institute of Chemical Engineering IIChE etc.
- Guidelines from Regulation and Accreditation bodies like National Board of Accreditation, NAAC.

STEP II: Feedback was taken from the following internal Stake holders like

- Management of the Institutes including Vice Chancellor, Dean (Under Graduate studies), Dean (Faculty Affairs) and Dean (RIE) etc.
- All Faculty
- Support Staff
- Students

STEP III: Feedback from external stake holders:

- Alumni
- Employers
- Industries
- Experts from other reputed institutions

STEP IV: The feedbacks from the stake holders were analysed and reviewed by Departmental Academic Committee to make the draft of Departmental Vision, Mission as well as the Programme Educational Objectives [PEOs].

STEP V: Academic council of the institute approved the vision, mission and PEOs of the department before display on website and common places etc.

1.1.4. Dissemination of Vision, Mission and PEOs (5)

(Describe where (websites, curricula, posters etc.) the Vision, Mission and PEOs are published and detail the process which ensures awareness among internal and external stakeholders with effective process implementation.

Internal stakeholders may include Management, Governing Board Members, faculty, support staff, students etc. and external stakeholders may include employers, industry, alumni, funding agencies, etc.)

Posters, and Flyers are printed and disseminated as given in the following Table:

Medium/location of publication of Department Vision, Mission and PEOs

Medium/Location of publication	INSTITUTE		Department of Chemical Engineering		
	Vision	Mission	Vision	Mission	PEO
Institute Website	Y	Y	Y	Y	Y
Department Notice Board	Y	Y	Y	Y	Y
Department Seminar	Y	Y	Y	Y	Y
Common areas- Corridors	Y	Y	Y	Y	Y
Classrooms, labs, Staff rooms	Y	Y	Y	Y	Y
All stakeholders feedback forms	Y	Y	Y	Y	Y
Flyers to Students, Faculty	Y	Y	Y	Y	Y

1.1.5. Mapping of PEOs with Mission (10)

(Generate a Mission of the Department–PEOs matrix with justification and rationale of the mapping.)

PEO Statements	M1	M2	M3
To understand and apply working knowledge of chemical engineering principles in independent research and development.	3	3	2
To implement the inter-perceptional skills of individuals in technical profession.	3	2	2
To prepare students for employment in industries such as, chemical, petroleum, and allied chemical industries.	3	3	3

To update technical know-how by self-learning besides learning a great deal by associating with professional bodies and alumni.	3	1	2
To develop an ability to succeed in the graduate competitive examinations and pursue higher studies in chemical engineering or lateral disciplines.	2	3	2

Note:

- M_1, M_2. . . M_n are distinct elements of mission statement. Enter correlation levels as Low (1), Medium (2) and High (3). If there is no correlation, put "-"

Justification/rationale for mapping of PEOs vs Department missions are detailed below:

1. PEO1 vs M1 & M2 were set at target '3' because working knowledge of chemical engg. principles mentioned in PEO1 is directly related to employment in industry, academia and also for higher studies and research as depicted in M1 & M2….while vs M3 was set at '2', because apart from basic studies students may have to acquire experience for developing sustainable technologies.

2. PEO2 vs M2 & M3 were set at target '2', as PEO2 mentions interpersonal skills in profession, whereas M2 talks about PG research and M3 talks about developing sustainable technologies requiring exposure to practical problems…..PEO2 vs M1 were set at target '3' because the TWO statements are intertwined., i.e, interpersonal skills are required to become leaders in industry, academia etc.

3. PEO3 vs M1, M2, M3 all are set at level '3', because preparing students for employment in industries as envisaged in PEO3 is the MAIN OBJECTIVE of all the department missions either directly or indirectly.

4. PEO4 vs M1 is set at '3', because associating with professional bodies, industries, alumni are part and parcel of preparing engineers for jobs as told in M1; against M2 target was 1, as this mission relates to PG/research and against M3 target was at '2' because apart from these interactions, candidates will require exposure to practical problems to develop sustainable technologies mentioned in M3.

5. PEO5 vs M2 is set at "3", as both the statements are equivalent statements, whereas M1 & M3 are set at '2' because M1 talks about jobs and M3 talks about technology development unlike higher studies preparations in PEO5.

1.2 Curriculum Structure and Features (30)

1.2.1 State the Process for Developing/Revising the Program Curriculum (10)

Describe the process that periodically documents and demonstrates how the program curriculum has evolved, considering the Washington Accord Knowledge and Attitude Profile (WKs) and the Program Outcomes (POs) defined by the NBA, as listed in Annexure-II. Describe the process involving both internal and external stakeholders in framing the curriculum.)

Following steps were followed to determine the extent of compliance of the B.TECH (Chemical Engineering) curriculum for attaining the Programme Outcomes and Programme Specific Outcomes.

I. Feedbacks from the course teachers, industrial experts in the relevant field on course modification were collected. Course objectives, and Course Outcome objectives of each course were defined.

II. UGC/AICTE guidelines were followed in the modification of the syllabus. The preparation of the detailed syllabus was prepared by the concerned subject faculty following NEP guidelines on the basis of course objectives and course outcomes.

III. The lecture plan series was prepared after completion of the syllabus.

IV. The Articulation Matrix was prepared which maps theCourse Outcomes and Programme Outcomes of each course on the scale of 3. [0= no relation, 1=Low/Slight, 2= Medium/Moderate, 3 = High/ Substantial].

V. Departmental meetings were carried out after preparation of the above documents.

VI. The committee of 3-4 members were formed in providing input, suggesting changes in the prepared draft curriculum. The Gap in the course, and the syllabus was reviewed and modified to improve achievement of POs and PSOs.

VII. Compilation of various courses as per the new programme structure was carried out. Information of each Course Articulation Matrix is compiled in Programme Articulation Matrix

VIII. Gap in the compliance, if any, is documented and effort is made to improve compliance by bridge programmes and are incorporated in the Course Information Sheet. The examples of bridge programmes are: Mini projects/Projects Industry Expert /Guest lectures Laboratory experiment Industrial visits Summer training Self- learning such as use of NPTEL, MIT Open course Ware etc. Simulations

IX. The approval of draft syllabus was done in Departmental meeting.

X. The approval of programme structure along with syllabus in the meeting of Board of Studies (BOS) was done.

XI. B.Tech syllabus along with course structure was placed in Academic Council of BIT Mesra for approval, consequently the approved copy of B.Tech syllabus along with Course structure was placed in BOG of BIT Mesra for final approval.

1.2.2 Curriculum Structure (10)

(Provide details of courses in terms of teaching and learning scheme and number of credits in the Program curriculum.)

ID	Course Code	Course Titles	Teaching & Learning Scheme					
			Classroom Instruction (CI) (in hours per semester)		Lab Instruction (LI) (in hours per semester)	Term Work (TW) and Self Learning (SL) (TW+ SL) (in hours per semester)	Total no. of Hours per semester	Total Credits (C)* (Total Hours /30)
			L	T	P	SL		
1	MA24101	Mathematics-I	90	30	0	0	120	4.00
2	PH24101	Physics	90	30	0	0	120	4.00
3	BE24101	Biological Science for Engineers	60	0	0	0	60	2.00
4	CS24101	Programming for Problem Solving	90	30	0	0	120	4.00
5	EE24101	Basics of Electrical Engineering	60	30	0	0	90	3.00
6	PH24101	Physics Laboratory	0	0	30	0	30	1.00
7	CS24102	Programming for Problem Solving Lab	0	0	30	0	30	1.00
8	EE24102	Electrical Engineering Lab	0	0	30	0	30	1.00
9	HS24131	Communication Skill-I	0	0	45	0	45	1.50
10	MC24101	NCC/NSS/PT & Games/Creative Arts	0	0	0	30	30	1.00
11	MA24103	Mathematics-II	90	30	0	0	120	4.00
12	CH24101	Chemistry	90	30	0	0	120	4.00
13	EC24101	Basic Electronics	60	30	0	0	90	3.00
14	ME24101	Basics of Mechanical Engineering	60	30	0	0	90	3.00
15	CE24101	Environmental Science	60	0	0	0	60	2.00
16	CH24102	Chemistry Laboratory	0	0	30	0	30	1.00

17	EC24102	Basic Electronics Lab	0	0	30	0	30	1.00
18	ME24102	Engineering Graphics	0	0	60	0	60	2.00
19	PE24102	Workshop Practice	0	0	30	0	30	1.00
20	MC24106	NCC/NSS/PT & Games/Creative Arts	0	0	0	30	30	1.00
21	CL24201	Thermodynamics	90	30	0	0	120	4.00
22	CL24203	Fluid Mechanics	90	30	0	0	120	4.00
23	CL24205	Chemical Process Calculations	60	30	0	0	90	3.00
24	CL24207	Heat Transfer Operations	90	30	0	0	120	4.00
25	MA24201	Numerical Methods	60	0	0	0	60	2.00
26	MT24131	UHV-II: Understanding Harmony	90	0	0	0	90	3.00
27	MA24202	Numerical Methods Lab	0	0	30	0	30	1.00
28	MC24201	NCC/NSS/PT & Games/Creative Arts	0	0	30	0	30	1.00
29	CL24209	Mechanical Operations	90	0	0	0	90	3.00
30	CL24211	Mass Transfer Operation-I	90	30	0	0	120	4.00
31	CL24213	Chemical Reaction Engineering-I	90	30	0	0	120	4.00
32	CL24215	Material Science & Engineering	90	0	0	0	90	3.00
33	CL24231/233/235/237/239	Program Elective-I	90	0	0	0	90	3.00
34	XX24XXX	Open Elective-I / MOOC-I	90	0	0	0	90	3.00
35	HS24211	Indian Knowledge System	0	0	0	0	0	0.00
36	CL24202	Chemical Engineering Lab-I	0	0	45	0	45	1.50
37	MC24206	NCC/NSS/PT & Games/Creative Arts	0	0	30	0	30	1.00
38	CL24301	Mass Transfer Operation-II	90	30	0	0	120	4.00
39	CL24303	Chemical Reaction Engineering-II	90	30	0	0	120	4.00

40	CL24305	Project Engineering & Economics	90	0	0	0	90	3.00
41	CL24307	Chemical Process Technology	90	0	0	0	90	3.00
42	CL24331/333/335/337/339/341	Program Elective-II	90	0	0	0	90	3.00
43	XX24XXX	Open Elective-II / MOOC-II	90	0	0	0	90	3.00
44	CL24304	CAPE Lab	0	0	45	0	45	1.50
45	CL24302	Chemical Engineering Lab-II	0	0	45	0	45	1.50
46	HS24133	Communication Skill-II	0	0	45	0	45	1.50
47	CL24300	Project-I	0	0	0	60	60	2.00
48	CL24309	Transport Phenomena	90	30	0	0	120	4.00
49	CL24311	Process Control & Instrumentation	90	30	0	0	120	4.00
50	CL24351/353/355/357/359	Program Elective-III	90	0	0	0	90	3.00
51	CL24371/373/375/377/379	Program Elective-IV	90	0	0	0	90	3.00
52	XX24XXX	Open Elective-III / MOOC-III	90	0	0	0	90	3.00
53	CL24306	Process Equipment Design Lab	0	0	45	0	45	1.50
54	CL24308	Chemical Engineering Lab-III	0	0	45	0	45	1.50
55	CL24350	Project-II	0	0	0	60	60	2.00
56	CL24401	Process Modeling, Simulation & Optimization	90	30	0	0	120	4.00
57	CL24431/433/435/437/439	Program Elective-V	90	0	0	0	90	3.00
58	CL24451/453/455/457/459	Program Elective-VI	90	0	0	0	90	3.00
59	XX24XXX	Open Elective-IV / MOOC-IV	90	0	0	0	90	3.00
60	MT24204	Constitution of India	0	0	0	0	0	0.00
61	CL24402	PCI Lab	0	0	45	0	45	1.50
62	CL24404	Plant Design	0	0	60	0	60	2.00

63	MC24400	Summer Training	0	0	0	120	120	4.00
64	CL24400	Project-III	0	0	90	0	90	3.00
65	CL24450	Project-IV / Industry Internship	0	0	180	0	180	6.00
66	CL24498	Comprehensive Viva	0	0	30	0	30	1.00
Total			3120	570	1050	300	**5040**	**168.00**

*This is as per the new National Credit Framework, which accounts for 30 hrs. of learning as equivalent to 1 credit. Those universities which are still following the LTP will transform them into no. of hours and fill in the above table.

Legend:

CI: Classroom Instruction (Includes different instructional/implementation strategies i.e. Lecture (L), Tutorial (T), Case method, Demonstrations, Video demonstration, Problem based learning etc. to deliver theoretical concepts)

LI: Laboratory Instruction (Includes experiments/practical performances /problem- based experiences in laboratory, workshop, field or other locations using different instructional/Implementation strategies)

TW: Term work (includes assignments, seminars, micro projects, industrial visits, any other student activities etc.)

SL: Self Learning, MOOCs, spoken tutorials, online educational resources etc. (If Provided in curriculum structure.)

1.2.3 Components of Curriculum (5)

(Provide details of Curriculum components for all relevant Years.)

Curriculum Component	Curriculum Content (% of total number of credits of the program)	Total number of contact hours	Total number of credits
Basic Sciences	14.90	28.00	25.00
Basic Engineering	11.30	25.00	19.00
Humanities and Social Sciences	3.60	11.00	6.00
Program Core	39.90	79.00	67.00
Program Electives	10.70	18.00	18.00
Open Electives	7.10	12.00	12.00
Project(s)	7.70	26.00	13.00
Internships/Seminars	2.40	40.00	4.00
Any other (Please specify)	2.40	10.00	4.00
		Total number of Credits:	168.00

1.2.4 Strategies for Education Reforms (05)

(A brief explanation of the plans to implement and map activities in curriculum design with multidisciplinary and interdisciplinary programs, the establishment of an academic bank of credits system, APAAR etc.)

Strategies for Educational Reforms:

1. Modification of course curriculum: In NEP syllabus redesign of curriculum was done allowing students to take flexible subject choices in program and open electives. The provision of minor, in-depth specialization and vocational courses are incorporated. Students have exit options after completion of certain credits and would get subsequent certificates like diploma, BSc Engineering after TWO years and THREE years respecitvely. The course curriculum was prepared to promote interdisciplinary learning in line with the National Education Policy (NEP 2020). The course structure has the provision of foundation course like communication skills, Indian knowledge system. Courses on ethics, UHV and general discipline oriented courses are included.

2. Provision of project-based learning and Industrial Internship: The course structure has project-based learning that integrates multiple disciplines to solve real problems and mandatory summer Industrial Internship of 2 credits. Students also have option of carrying out final year UG project of 6 credits as industry internship projects.

3. Academic Bank of Credits (ABC) and APAAR:

- NEP 2020 has the provision of allowing credit transfers between universities, enabling multiple entry–exit options in higher education.
- Setting up the ABC as a digital repository for students earned credits across institutions.
- Linking the credits to the APAAR ID (Automated Permanent Academic Account Registry) to provide each student with a lifelong academic identity.

4. Expected Outcomes:

- Enhanced student flexibility in learning pathways.
- Promotion of multidisciplinary education aligned with NEP 2020.
- Increased mobility across institutions through credit transfer.

1.3 PO, PSO and their Mapping with Courses (20)

1.3.1 POs and PSOs (5)

(Program Specific Outcomes (PSOs) are defined by the program, with up to 3 PSOs specified.)

PSO1	To develop students' understanding of the core scientific, mathematical and engineering principles conceive and design processes to produce, transform and transport materials (chemical products) - beginning with experimentation in the laboratory and followed by implementation of technologies in full-scale production.
PSO2	To prepare students for professional work in development, design, modelling, simulation, optimization and operation of chemical products and processes.
PSO3	To prepare students with high scholastic attainment to enter graduate programs leading to advanced degrees in chemical engineering or in related professional, scientific, and engineering fields.

1.3.2 Mapping between the Courses and POs/PSOs (15)

(Mention the courses relevant to the POs/PSOs.)

PO Number	List of Courses
PO1	CL24201, CL24203, CL24205, CL24207, CL24209, CL24211, CL24213, CL24215, CL24202, CL24301, CL24303, CL24305, CL24307, CL24304, CL24302, CL24309, CL24311, CL24306, CL24308, CL24401, CL24402, CL24404
PO2	CL24201, CL24203, CL24205, CL24207, CL24209, CL24211, CL24213, CL24215, CL24202, CL24301, CL24303, CL24305, CL24307, CL24304, CL24302, CL24309, CL24311, CL24306, CL24308, CL24401, CL24402, CL24404
PO3	CL24201, CL24203, CL24205, CL24207, CL24209, CL24211, CL24213, CL24215, CL24202, CL24301, CL24303, CL24305, CL24307, CL24304, CL24302, CL24309, CL24311, CL24306, CL24308, CL24401, CL24402, CL24404
PO4	CL24201, CL24203, CL24205, CL24207, CL24211, CL24213, CL24215, CL24202, CL24301, CL24303, CL24305, CL24307, CL24304, CL24302, CL24309, CL24311, CL24306, CL24308, CL24401, CL24402, CL24404
PO5	CL24201, CL24203, CL24205, CL24207, CL24209, CL24211, CL24213, CL24215, CL24202, CL24301, CL24303, CL24305, CL24307, CL24304, CL24302, CL24309, CL24311, CL24306, CL24308, CL24401, CL24402, CL24404
PO6	CL24201, CL24203, CL24211, CL24213, CL24215, CL24202, CL24301, CL24303, CL24305, CL24307, CL24304, CL24302, CL24309, CL24311, CL24306, CL24308, CL24401, CL24402, CL24404
PO7	CL24203, CL24211, CL24213, CL24215, CL24202, CL24301, CL24303, CL24305, CL24307, CL24304, CL24302, CL24309, CL24311, CL24306, CL24308, CL24401, CL24402, CL24404
PO8	CL24203, CL24211, CL24213, CL24215, CL24202, CL24301, CL24303, CL24305, CL24307, CL24304, CL24302, CL24309, CL24311, CL24306, CL24308, CL24401, CL24402, CL24404
PO9	CL24203,CL24207, CL24211, CL24213, CL24215, CL24202, CL24301, CL24303, CL24305, CL24307, CL24304, CL24302, CL24309, CL24311, CL24306, CL24308, CL24401, CL24402, CL24404
PO10	CL24203, CL24205, CL24209, CL24211, CL24213, CL24215, CL24202, CL24301, CL24303, CL24305, CL24307, CL24304, CL24302, CL24309, CL24311, CL24306, CL24308, CL24401, CL24402, CL24404
PO11	CL24201, CL24203, CL24205, CL24211, CL24213, CL24215, CL24202, CL24301, CL24303, CL24305, CL24307, CL24304, CL24302, CL24309, CL24311, CL24306, CL24308, CL24401, CL24402, CL24404

PSO Number	List of Courses
PSO1	CL24201, CL24203, CL24205, CL24207, CL24209, CL24211, CL24213, CL24215, CL24202, CL24301, CL24303, CL24305, CL24307, CL24304, CL24302, CL24309, CL24311, CL24306, CL24308, CL24401, CL24402, CL24404
PSO2	CL24201, CL24203, CL24205, CL24207, CL24209, CL24211, CL24213, CL24215, CL24202, CL24301, CL24303, CL24305, CL24307, CL24304, CL24302, CL24309, CL24311, CL24306, CL24308, CL24401, CL24402, CL24404
PSO3	CL24201, CL24203, CL24207, CL24209, CL24211, CL24213, CL24215, CL24202, CL24301, CL24303, CL24305, CL24307, CL24304, CL24302, CL24309, CL24311, CL24306, CL24308, CL24401, CL24402, CL24404

1.4 Course Outcomes and Course Articulation Matrix (30)

1.4.1. Course Outcome (Semester Wise) (15)

(Provide Course outcomes (COs) for two core courses per semester from 1-8 semesters as a sample. The maximum number of outcomes for a course is expected to be around 6. COs should reflect on the measurable outcomes towards attaining POs and PSOs).

Course Code:	MA24101	**Semester:**	1
Course Outcome	**Statements**		
CO24101.1	Decide the behavior of sequences and series using appropriate tests.		
CO24101.2	Handle problems related to the theory of matrices including elementary transformations, rank and its application in consistency of system of linear equations, eigenvalues, eigenvectors etc.		
CO24101.3	Get an understanding of partial derivatives and their applications in finding maxima - minima problems.		
CO24101.4	Apply the principles of integrals (multivariable functions viz. double and triple integrals) to solve a variety of practical problems in engineering and sciences.		
CO24101.5	Get an understanding of gradient, divergence, curl associated with derivatives of vector point functions and integrals of vector point functions and demonstrate a depth of understanding in advanced mathematical topics, enhance and develop the ability of using the language of mathematics in engineering.		

Course Code:	PH24101	**Semester:**	1
Course Outcome	**Statements**		
CO24101.1	Analyse the intensity variation of light due to polarization, interference and diffraction.		
CO24101.2	Formulate and solve the problems on electromagnetism		
CO24101.3	Explain and apply concepts of special theory of relativity and its consequences		
CO24101.4	Apply the concepts of quantum mechanics such as wave-particle duality and obtain the solution of simple quantum mechanical problems.		
CO24101.5	Explain working principle of lasers and to summarize its applications, describe basic concepts of nuclear and plasma physics.		

Course Code:	MA24103	**Semester:**	2
Course Outcome	**Statements**		
CO24103.1	Investigate the occurrence of ordinary differential equations in real-life problems and identify the suitable methods available for their solutions.		
CO24103.2	Develop skills to solve and implement various forms of differential equations and special functions in diverse domains.		
CO24103.3	Learn to solve various forms of partial differential equations arising in real-world.		

CO24103.4	Gain an understanding of complex variable functions and their properties in science and engineering.
CO24103.5	Comprehend and apply the concept of probability distributions in solving problems related to uncertainty.

Course Code:	CH24101	**Semester:**	2
Course Outcome	**Statements**		
CO24101.1	Able to explain the bonding in a coordination complex.		
CO24101.2	Able to explain the 3D structure, aromaticity and stereochemistry of organic molecules.		
CO24101.3	Able to predict the rate, molecularity and mechanism of a simple as well as catalytic Reaction.		
CO24101.4	Able to explain the UV-vis, IR and NMR spectra of unknown molecules.		
CO24101.5	Able to interpret the phase diagram of simple one and two component heterogeneous systems in equilibrium and the electrochemical behavior of the molecules.		

Course Code:	CL24201	**Semester:**	3
Course Outcome	**Statements**		
CO24201.1	Apply the laws of thermodynamics on closed and open systems.		
CO24201.2	Evaluate the properties of real gases.		
CO24201.3	Solve problems involving various thermodynamic cycles.		
CO24201.4	Evaluate the thermodynamic properties (Such as Partial molar properties, Fugacity coefficients, activity coefficients) of pure fluid and mixtures.		
CO24201.5	Predict equilibrium composition of mixtures under phase and chemical-reaction equilibria.		

Course Code:	CL24205	**Semester:**	3
Course Outcome	**Statements**		
CO24205.1	Apply the concept of dimension and unit conversion to check dimensional consistency of balanced equation and understand the specific terms used in process calculation.		
CO24205.2	Solve problems related to ideal and real gas and solution.		
CO24205.3	Solve material balance problems without chemical reactions.		
CO24205.4	Solve material balance problems with chemical reactions.		
CO24205.5	Solve energy balance problems of various unit processes.		

Course Code:	CL24211	Semester:	4
Course Outcome	**Statements**		
CO24211.1	Explain the basic mechanism of mass transfer including diffusion and convective mass transfer.		
CO24211.2	Determine the mass transfer coefficient and solve problems related to interphase mass transfer.		
CO24211.3	Explain the gas-liquid contacting process and solve problems related to design calculation.		
CO24211.4	Solve problems on design calculation of distillation column.		
CO24211.5	Explain enhanced distillation and solve related problems.		

Course Code:	CL24213	Semester:	4
Course Outcome	**Statements**		
CO24213.1	Explain the concepts of Kinetics and Rate Laws.		
CO24213.2	Analyze ideal batch reactor kinetics for homogeneous reactions.		
CO24213.3	Design of ideal isothermal reactors for single and multiple reactions.		
CO24213.4	Design of ideal non-isothermal reactors.		
CO24213.5	Analyzing the non-ideality in the flow reactors.		

Course Code:	CL24301	Semester:	5
Course Outcome	**Statements**		
CO24301.1	Solve design calculation problems on liquid-liquid and solid-liquid extraction.		
CO24301.2	Apply the concept of humidification, cooling tower and solve the related problems.		
CO24301.3	Explain the drying operations, different dryers and analyze & solve the related problems.		
CO24301.4	Explain the various adsorption isotherms and solve problems related to adsorption.		
CO24301.5	Apply the knowledge of crystallization and membrane- based separation processes and solve the related problems.		

Course Code:	CL24303	Semester:	5
Course Outcome	**Statements**		
CO24303.1	Describe the heterogeneous catalysis and evaluate the physical properties of the catalysts.		
CO24303.2	Derive the kinetics for heterogeneous catalytic reaction.		
CO24303.3	Explain the transport effects of reaction in the heterogeneous catalysis.		
CO24303.4	Derive the kinetics for heterogeneous non-catalytic reaction.		
CO24303.5	Describe the kinetics of multiphase and biochemical reaction systems.		

Course Code:	CL24309	Semester:	6
Course Outcome	**Statements**		
CO24309.1	Identify mechanisms of transport phenomena and establish the equations of changes in the isothermal/non-isothermal and flow systems.		
CO24309.2	Apply the equation of changes in momentum transport problems and derive the velocity and stress profile.		
CO24309.3	Apply the non-isothermal equation of changes in energy transport problems/ coupled transport processes and derive the temperature profile.		
CO24309.4	Apply the equation of changes in species transport problems, with/without chemical reactions and derive the concentration profile.		
CO24309.5	Introduction to turbulent transport processes with analogies and empirical equations.		

Course Code:	CL24311	Semester:	6
Course Outcome	**Statements**		
CO24311.1	Define the operating principles of various instruments and measurements in a chemical process plant.		
CO24311.2	Developing transfer function models, block diagram and compute the response of the developed transfer function for various forcing functions.		
CO24311.3	Analyze the stability of a control system given a mathematical model of a control system including its components.		
CO24311.4	Design of controller using different tuning techniques.		
CO24311.5	Apply computer-based advanced process control for better accuracy, economy, product quality and safety.		

Course Code:	CL24401	Semester:	7
Course Outcome	**Statements**		
CO24401.1	Develop mathematical models for chemical engineering systems.		
CO24401.2	Formulate optimization problem.		
CO24401.3	Solve unconstrained Single Variable Optimization problems.		
CO24401.4	Solve unconstrained Multivariable Optimization problems.		
CO24401.5	Solve Linear Programming Problems.		

Course Code:	CL24402	**Semester:**	7
Course Outcome	**Statements**		
CO24402.1	Perform experiments on temperature, pressure, flow, and level control trainer and evaluate various related parameters.		
CO24402.2	Evaluate temperature of a system using various temperature measuring instruments.		
CO24402.3	Evaluate pressure of a system using Flapper-nozzle.		
CO24402.4	Analyze the characteristics of control valve in a control system.		
CO24402.5	Experiment on I/P and P/I convertor.		

Course Code:	CL24450/CL24490	**Semester:**	8
Course Outcome	**Statements**		
CO24450/CO24490.1	Problem Identification & Analysis.		
CO24450/CO24490.2	Design & Research Application.		
CO24450/CO24490.3	Experimentation & Data Interpretation.		
CO24450/CO24490.4	Project Management, Teamwork & Professional Skills.		
CO24450/CO24490.5	Technical Communication: Report Writing & Presentation.		

1.4.2 Course Articulation Matrix (15)

(Provide course articulation matrices for two core courses per semester from 1-8 semesters which have been provided in the section 1.4.1. Select courses to demonstrate the mapping/correlation with POs and PSOs.)

1. Course Name: MA24101

Course	Statements	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PSO-1	PSO-2	PSO-3
MA24101.1	Decide the behavior of sequences and series using appropriate tests.	3	3	2	2	1	0	0	0	0	1	2	3	2	2
MA24101.2	Handle problems related to the theory of matrices including elementary transformations, rank and its application in consistency of system of linear equations, eigenvalues, eigenvectors etc.	3	3	2	2	2	0	0	0	0	1	2	3	3	2
MA24101.3	Get an understanding of partial derivatives and their applications in finding maxima - minima problems.	3	3	2	2	1	0	0	0	0	1	2	3	3	2
MA24101.4	Apply the principles of integrals (multivariable functions viz. double and triple integrals) to solve a variety of practical problems in engineering and sciences.	3	3	3	3	2	1	0	0	0	1	2	3	2	2
MA24101.5	Get an understanding of gradient, divergence, curl associated with derivatives of vector point functions and integrals of vector point functions and demonstrate a depth of understanding in advanced mathematical topics, enhance and develop the ability of using the language of mathematics in engineering.	3	3	2	3	2	1	1	1	1	2	2	3	3	3

2. Course Name: PH24101

Course	Statements	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PSO-1	PSO-2	PSO-3
PH24101.1	Analyse the intensity variation of light due to polarization, interference and diffraction.	2	2	0	1	1	0	0	1	0	0	2	3	2	2
PH24101.2	Formulate and solve the problems on electromagnetism	2	2	0	1	1	0	0	1	0	0	2	3	3	2
PH24101.3	Explain and apply concepts of special theory of relativity and its consequences	2	1	0	1	1	0	0	1	0	0	2	2	2	3
PH24101.4	Apply the concepts of quantum mechanics such as wave-particle duality and obtain the solution of simple quantum mechanical problems.	2	1	0	1	1	0	0	1	0	0	2	3	3	3
PH24101.5	Explain working principle of lasers and to summarize its applications, describe basic concepts of nuclear and plasma physics.	2	1	0	1	1	0	0	1	0	0	2	3	2	3

3. Course Name: MA24103

Course	Statements	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PSO-1	PSO-2	PSO-3
MA24103.1	Investigate the occurrence of ordinary differential equations in real-life problems and identify the suitable methods available for their solutions.	3	3	2	3	2	1	0	0	0	1	2	3	2	1
MA24103.2	Develop skills to solve and implement various forms of differential equations and special functions in diverse domains.	3	3	2	3	2	1	0	0	1	1	2	3	3	2
MA24103.3	Learn to solve various forms of partial differential equations arising in real-world.	3	3	2	3	2	1	0	0	1	1	2	3	3	2
MA24103.4	Gain an understanding of complex variable functions and their properties in science and engineering.	3	2	2	2	2	1	0	0	1	1	2	2	1	1
MA24103.5	Comprehend and apply the concept of probability distributions in solving problems related to uncertainty.	3	3	2	2	2	1	1	1	1	2	3	2	2	3

4. Course Name: CH24101

Course	Statements	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PSO-1	PSO-2	PSO-3
CH24101.1	Able to explain the bonding in a coordination complex.	3	2	1	1	0	0	0	0	1	0	2	3	2	1
CH24101.2	Able to explain the 3D structure, aromaticity and stereochemistry of organic molecules.	3	3	2	1	0	0	0	0	1	0	2	3	2	1
CH24101.3	Able to predict the rate, molecularity and mechanism of a simple as well as catalytic Reaction.	3	3	3	2	1	1	0	0	1	0	3	3	3	2
CH24101.4	Able to explain the UV-vis, IR and NMR spectra of unknown molecules.	3	2	1	3	3	0	0	0	2	0	2	3	2	1
CH24101.5	Able to interpret the phase diagram of simple one and two component heterogeneous systems in equilibrium and the electrochemical behavior of the molecules.	3	3	2	2	1	2	0	0	1	0	3	3	3	2

5. Course Name: CL24201

Course	Statements	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PSO-1	PSO-2	PSO-3
CL24201.1	Apply the laws of thermodynamics on closed and open systems	3	3	2	2	2	2	-	-	-	-	2	3	2	-
CL24201.2	Evaluate the properties of real gases	3	2	2	2	2	-	-	-	-	-	2	3	2	-
CL24201.3	Solve problems involving various thermodynamic cycles	3	3	3	2	2	2	-	-	-	-	2	3	3	-
CL24201.4	Evaluate the thermodynamic properties (Such as Partial molar properties, Fugacity coefficients, activity coefficients) of pure fluid and mixtures.	3	3	2	3	2	-	-	-	-	-	2	3	3	2
CL24201.5	Predict equilibrium composition of mixtures under phase and chemical-reaction equilibria.	3	3	2	3	2	2	-	-	-	-	2	3	3	3

6. Course Name: CL24205

Course	Statements	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PSO-1	PSO-2	PSO-3
CL24205.1	Apply the concept of dimension and unit conversion to check dimensional consistency of balanced equation and understand the specific terms used in process calculation.	3	2	2	2	2	-	-	-	-	2	2	3	2	-
CL24205.2	Solve problems related to ideal and real gas and solution.	3	3	2	2	2	-	-	-	-	2	2	3	2	-
CL24205.3	Solve material balance problems without chemical reactions.	3	2	2	3	2	-	-	-	-	2	2	2	3	-
CL24205.4	Solve material balance problems with chemical reactions.	3	3	2	3	2	-	-	-	-	2	2	2	3	-
CL24205.5	Solve energy balance problems of various unit processes.	3	2	3	2	2	-	-	-	-	2	2	3	2	-

7. Course Name: CL24211

Course	Statements	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PSO-1	PSO-2	PSO-3
CL24211.1	Explain the basic mechanism of mass transfer including diffusion and convective mass transfer.	3	3	2	2	2	2	1	1	2	1	2	3	2	2
CL24211.2	Determine the mass transfer coefficient and solve problems related to interphase mass transfer.	3	3	3	3	3	2	1	1	2	2	2	3	3	2
CL24211.3	Explain the gas-liquid contacting process and solve problems related to design calculation.	3	3	3	3	3	2	1	2	2	2	2	3	3	2
CL24211.4	Solve problems on design calculation of distillation column.	3	3	3	3	3	2	1	2	2	2	2	3	3	2
CL24211.5	Explain enhanced distillation and solve related problems.	3	3	3	3	3	2	1	2	2	2	2	3	3	2

8. Course Name: CL24213

Course	Statements	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PSO-1	PSO-2	PSO-3
CL24213.1	Explain the concepts of Kinetics and Rate Laws.	3	3	2	2	2	2	1	1	2	1	2	3	2	2
CL24213.2	Analyze ideal batch reactor kinetics for homogeneous reactions.	3	3	3	3	3	2	1	1	2	2	2	3	3	2
CL24213.3	Design of ideal isothermal reactors for single and multiple reactions.	3	3	3	3	3	2	1	2	2	2	2	3	3	2
CL24213.4	Design of ideal non-isothermal reactors.	3	3	3	3	3	2	1	2	2	2	2	3	3	2
CL24213.5	Analyzing the non-ideality in the flow reactors.	3	3	3	3	3	2	1	2	2	2	2	3	3	2

9. Course Name: CL24301

Course	Statements	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PSO-1	PSO-2	PSO-3
CL24301.1	Solve design calculation problems on liquid-liquid and solid-liquid extraction.	3	3	3	3	3	2	1	2	2	2	2	3	3	2
CL24301.2	Apply the concept of humidification, cooling tower and solve the related problems.	3	3	3	3	3	2	1	2	2	2	2	3	3	2
CL24301.3	Explain the drying operations, different dryers and analyze & solve the related problems.	3	3	3	3	3	2	1	2	2	2	2	3	3	2
CL24301.4	Explain the various adsorption isotherms and solve problems related to adsorption.	3	3	3	3	3	2	1	2	2	2	2	3	3	2
CL24301.5	Apply the knowledge of crystallization and membrane-based separation processes and solve the related problems.	3	3	3	3	3	2	1	2	2	2	2	3	3	2

10. Course Name: CL24303

Course	Statements	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PSO-1	PSO-2	PSO-3
CL24303.1	Describe the heterogeneous reactions and evaluate the physical properties of the catalysts.	3	3	2	2	2	2	1	2	2	1	2	3	2	2
CL24303.2	Derive the kinetics for heterogeneous catalytic reaction.	3	3	3	3	3	2	1	2	2	2	2	3	3	2
CL24303.3	Explain the transport effects of reaction in the heterogeneous catalysis.	3	3	3	3	3	2	1	2	2	2	2	3	3	2
CL24303.4	Derive the kinetics for heterogeneous non-catalytic reaction.	3	3	3	3	3	2	1	2	2	2	2	3	3	2
CL24303.5	Describe the kinetics of multiphase and biochemical reaction systems.	3	3	3	3	3	2	1	2	2	2	2	3	3	2

11. Course Name: CL24309

Course	Statements	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PSO-1	PSO-2	PSO-3
CL24309.1	Identify mechanisms of transport phenomena and establish the equations of changes in the isothermal/non-isothermal and flow systems.	3	3	2	2	2	2	1	2	2	1	2	3	2	2
CL24309.2	Apply the equation of changes in momentum transport problems and derive the velocity and stress profile.	3	3	3	3	3	2	1	2	2	2	2	3	3	2
CL24309.3	Apply the non-isothermal equation of changes in energy transport problems/ coupled transport processes and derive the temperature profile.	3	3	3	3	3	2	1	2	2	2	2	3	3	2
CL24309.4	Apply the equation of changes in species transport problems, with/without chemical reactions and derive the concentration profile	3	3	3	3	3	2	1	2	2	2	2	3	3	2
CL24309.5	Introduction to turbulent transport processes with analogies and empirical equations.	3	2	2	2	3	2	1	2	2	1	2	3	2	2

12. Course Name: CL24311

Course	Statements	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PSO-1	PSO-2	PSO-3
CL24311.1	Define the operating principles of various instruments and measurements in a chemical process plant.	3	2	2	2	3	2	1	2	2	2	2	3	3	2
CL24311.2	Developing transfer function models, block diagram and compute the response of the developed transfer function for various forcing functions.	3	3	3	3	3	2	1	2	2	2	2	3	3	2
CL24311.3	Analyze the stability of a control system given a mathematical model of a control system including its components.	3	3	3	3	3	2	1	2	2	2	2	3	3	2
CL24311.4	Design of controller using different tuning techniques.	3	3	3	3	3	2	1	2	2	3	2	3	3	2
CL24311.5	Apply computer-based advanced process control for better accuracy, economy, product quality and safety.	3	3	3	3	3	2	1	2	2	3	2	3	3	2

13. Course Name: CL24401

Course	Statements	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PSO-1	PSO-2	PSO-3
CL24401.1	Develop mathematical models for chemical engineering systems.	3	3	3	3	3	2	1	2	2	2	3	3	3	2
CL24401.2	Formulate optimization problem.	3	3	3	3	3	2	1	2	2	3	3	3	3	2
CL24401.3	Solve unconstrained Single Variable Optimization problems.	3	3	3	3	3	2	1	2	2	3	3	3	3	2
CL24401.4	Solve unconstrained Multivariable Optimization problems.	3	3	3	3	3	2	1	2	2	3	3	3	3	2
CL24401.5	Solve Linear Programming Problems.	3	3	3	3	3	2	1	2	2	3	3	3	3	2

14. Course Name: CL24402

Course	Statements	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PSO-1	PSO-2	PSO-3
CL24402.1	Perform experiments on temperature, pressure, flow, and level control trainer and evaluate various related parameters.	2	2	3	3	3	2	1	3	3	2	2	3	3	2
CL24402.2	Evaluate temperature of a system using various temperature measuring instruments.	2	2	3	3	3	2	1	3	3	2	2	3	3	2
CL24402.3	Evaluate pressure of a system using Flapper-nozzle.	2	2	3	3	3	2	1	3	3	2	2	3	3	2
CL24402.4	Analyze the characteristics of control valve in a control system.	2	2	3	3	3	2	1	3	3	2	2	3	3	2
CL24402.5	Experiment on I/P and P/I convertor	2	2	3	3	3	2	1	3	3	2	2	3	3	2

15. Course Name: CL24450/CL24490

Course	Statements	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PSO-1	PSO-2	PSO-3
CL24450.1/ CL24490.1	Problem Identification & Analysis.	3	3	2	2	1	1	1	1	0	0	1	3	2	2
CL24450.2/ CL24490.2	Design Design & Research Application.	3	2	3	2	2	2	1	1	1	2	2	3	3	3
CL24450.3/ CL24490.3	Experimentation & Data Interpretation.	3	2	2	3	3	1	1	1	1	1	2	3	3	3
CL24450.4/ CL24490.4	Project Management, Teamwork & Professional Skills.	1	1	1	1	1	2	2	3	2	3	2	2	2	3
CL24450.5/ CL24490.5	Technical Communication: Report Writing & Presentation.	1	1	1	1	1	1	1	2	3	1	2	1	1	3

Note:

- Enter correlation levels 1, 2 or 3 as defined below:
- 1: Slight (Low)
- 2: Moderate (Medium)
- 3: Substantial (High),
- If there is no correlation, put "-"

1.5 Program Articulation Matrix (05)

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CL24201	3.00	2.80	2.20	2.40	2.00	2.00	0.00	0.00	0.00	0.00	2.00	3.00	2.60	2.50
CL24203	3.00	2.80	1.80	1.80	2.20	1.40	1.00	1.00	1.00	1.20	2.20	3.00	2.80	1.80
CL24205	3.00	2.40	2.20	2.40	2.00	0.00	0.00	0.00	0.00	2.00	2.00	2.60	2.40	0.00
CL24207	3.00	3.00	2.20	2.00	1.60	0.00	0.00	0.00	1.00	0.00	0.00	3.00	2.40	2.00
CL24209	3.00	2.20	2.60	0.00	2.20	0.00	0.00	0.00	0.00	2.20	0.00	3.00	2.20	2.20
CL24211	3.00	3.00	2.80	2.80	2.80	2.00	1.00	1.60	2.00	1.80	2.00	3.00	2.80	2.00
CL24213	3.00	3.00	2.80	2.80	2.80	2.00	1.00	1.80	2.00	1.80	2.00	3.00	2.80	2.00
CL24215	3.00	3.00	2.80	2.80	2.80	2.00	1.00	2.00	2.00	1.80	2.00	3.00	2.80	2.00
CL24202	2.00	2.00	3.00	3.00	3.00	2.00	1.00	3.00	3.00	2.00	1.00	3.00	3.00	2.00
CL24301	3.00	3.00	3.00	3.00	3.00	2.00	1.00	2.00	2.00	2.00	2.00	3.00	3.00	2.00
CL24303	3.00	3.00	2.80	2.80	2.80	2.00	1.00	2.00	2.00	1.80	2.00	3.00	2.80	2.00
CL24305	2.00	2.00	2.80	2.80	2.80	2.20	1.20	2.00	2.00	2.80	2.00	2.80	2.80	2.00
CL24307	3.00	3.00	2.80	2.60	2.80	2.40	1.00	2.00	2.00	2.60	2.00	3.00	2.80	2.00
CL24304	2.00	2.00	3.00	3.00	3.00	2.00	1.00	3.00	3.00	2.20	2.00	3.00	3.00	2.00
CL24302	2.00	2.00	3.00	3.00	3.00	2.00	1.00	3.00	3.00	2.00	1.00	3.00	3.00	2.00
CL24309	3.00	2.80	2.60	2.60	3.00	2.00	1.00	2.00	2.00	1.60	2.00	3.00	2.60	2.00
CL24311	3.00	2.80	2.80	2.80	3.00	2.00	1.00	2.00	2.00	2.40	2.00	3.00	3.00	2.00
CL24306	2.00	2.00	3.00	3.00	3.00	2.00	1.00	3.00	3.00	3.00	2.00	3.00	3.00	2.00
CL24308	2.00	2.00	3.00	3.00	3.00	2.00	1.00	3.00	3.00	2.00	1.00	3.00	3.00	2.00
CL24401	3.00	3.00	3.00	3.00	3.00	2.00	1.00	2.00	2.00	2.80	3.00	3.00	3.00	2.00
CL24402	2.00	2.00	3.00	3.00	3.00	2.00	1.00	3.00	3.00	2.00	2.00	3.00	3.00	2.00
CL24404	2.80	2.80	2.80	2.80	2.80	2.40	1.00	2.80	2.80	3.00	2.80	3.00	2.80	2.00
CL24231	3.00	2.20	1.00	1.00	1.60	2.60	3.00	1.00	2.00	2.00	2.00	3.00	1.80	3.00
CL24233	3.00	2.60	1.80	1.80	1.80	1.60	1.00	1.00	1.00	1.60	1.20	3.00	2.20	1.80
CL24235	3.00	2.80	2.00	2.60	2.80	2.00	1.00	2.00	2.00	2.00	2.00	3.00	3.00	3.00
CL24237	3.00	2.00	2.00	2.00	2.00	3.00	1.00	2.00	2.00	2.00	2.00	3.00	2.00	2.80
CL24239	3.00	2.80	2.00	2.80	2.20	3.00	1.00	2.00	2.00	2.20	2.00	3.00	2.00	3.00

CL24331	3.00	2.20	1.20	1.20	2.00	2.00	1.00	1.20	2.00	2.00	2.00	3.00	2.20	2.60
CL24333	3.00	2.60	2.00	1.60	1.60	1.60	1.00	1.00	1.00	1.60	1.00	3.00	1.80	2.00
CL24335	3.00	2.40	1.80	1.80	2.00	2.00	1.00	1.00	1.00	1.80	1.80	3.00	2.00	2.20
CL24337	3.00	2.60	2.00	2.00	1.80	2.00	1.00	1.20	2.00	2.00	2.00	3.00	2.60	2.00
CL24339	3.00	2.60	2.00	2.00	2.00	2.00	1.00	2.00	2.00	2.00	2.00	3.00	2.00	2.00
CL24341	3.00	2.60	1.80	2.00	3.00	2.00	1.00	2.00	2.00	1.20	2.00	3.00	2.40	1.00
CL24351	3.00	2.80	2.60	2.40	2.60	2.00	1.00	1.80	2.00	1.60	2.00	3.00	2.80	3.00
CL24353	3.00	2.80	2.80	2.60	2.80	2.00	1.00	1.80	2.00	1.00	2.00	3.00	2.80	2.20
CL24355	2.80	2.80	2.20	1.80	2.60	3.00	2.20	1.80	2.00	1.80	2.00	2.80	2.60	1.00
CL24357	3.00	2.80	2.80	2.00	2.80	2.00	1.00	1.80	2.00	1.00	2.00	3.00	2.80	3.00
CL24359	3.00	2.20	2.00	1.80	1.80	2.00	1.00	1.00	1.00	1.00	2.20	3.00	2.80	3.00
CL24371	3.00	2.40	1.80	1.80	2.20	2.00	1.00	1.00	1.00	1.00	2.20	3.00	2.80	3.00
CL24373	3.00	2.40	2.20	1.80	2.00	2.20	1.00	1.00	1.00	1.00	2.20	3.00	2.80	2.60
CL24375	3.00	2.40	1.80	1.60	2.20	2.20	1.00	1.00	1.00	1.00	2.20	3.00	2.60	2.40
CL24377	3.00	2.60	2.00	2.40	2.80	1.40	1.00	1.00	1.00	1.00	2.40	3.00	2.80	2.80
CL24379	3.00	2.20	2.20	1.60	1.60	3.00	1.00	1.00	1.00	1.00	2.20	3.00	2.80	2.20
CL24431	3.00	2.40	2.40	2.00	1.60	2.20	1.00	1.00	1.00	1.20	2.20	3.00	2.60	2.20
CL24433	3.00	2.60	2.60	2.00	2.20	1.60	1.00	1.00	1.00	1.00	2.00	3.00	2.60	2.40
CL24435	3.00	2.80	2.20	2.20	2.40	1.20	1.00	1.00	1.00	1.00	2.00	3.00	2.60	2.40
CL24437	3.00	2.80	2.40	1.80	1.80	2.00	1.40	1.00	1.00	1.00	2.00	3.00	2.60	2.40
CL24439	3.00	2.80	2.60	2.00	1.80	2.40	1.00	1.00	1.00	1.00	2.40	3.00	2.60	2.60
CL24459	3.00	2.60	2.20	2.00	1.80	3.00	1.00	1.00	1.00	1.00	2.20	3.00	3.00	2.80
CL24451	3.00	2.40	2.40	2.20	2.20	2.00	1.00	1.00	1.00	1.00	2.00	3.00	2.60	2.80
CL24453	3.00	2.80	2.40	2.00	2.00	2.00	1.00	0.00	0.00	1.25	2.00	3.00	2.80	2.80
CL24455	3.00	2.60	2.40	1.80	1.80	2.40	1.60	1.00	1.00	1.20	2.20	3.00	2.80	2.80
CL24457	3.00	2.80	2.40	2.00	1.80	1.80	1.40	1.00	1.00	1.00	1.60	3.00	2.80	2.60

2 OUTCOME-BASED TEACHING LEARNING (120)

2.1 Describe Processes Followed to Ensure Quality of Teaching & Learning (20)

(Processes may include adherence to academic calendar and instruction methods using pedagogical initiatives such as real-world examples, collaborative learning, quality of laboratory experience with regard to conducting experiments, recording observations, analysis of data etc. encouraging fast learners, assisting slow learners etc. The implementation details and impact analysis need to be documented.)

ADHERANCE TO ACADEMIC CALENDER

1. The Academic Calendar for an Academic year is planned and announced before the beginning of the year.

2. In the Academic Calendar following points are considered: - dates for first and second quizzes, Mid Semester and End Semester Examination. The assignment submission dates and all extracurricular activities like Sports, Cultural festivals etc are also marked. The display date of shortage of attendance of students is also specified.

3. Each faculty prepares lecture plan for their respective course.

4. Timetable of each programme is prepared by timetable coordinator of each Department in consultation with central time-table coordinator. Then it is modified and finalized centrally by Central timetable coordinator and approved by HOD of each department, Office of Dean (UGS) and Dean (PGS).

5. Attendance of students is recorded online in ERP system. The shortage of attendance is displayed before the beginning of End Semester Exams.

IMPROVEMENT IN INSTRUCTIONAL METHOD

1. Individual faculty members prepare a lecture plan for their respective courses.

2. The attendance of students is uploaded/recorded online in the ERP system.

3. All classrooms are equipped with audio visual facilities and internet connections that aid the course delivery

4. The lectures can be uploaded through the intranet and accessed in the classroom and hostels. The lecture notes of various subjects are uploaded in department website and Microsoft teams.

5. Faculty members are encouraged to attend pedagogical training, and consistently make effort to improve instruction methods including Collaborative learning, Problem based learning, Project based learning etc.

6. Institute has a policy to take online faculty feedback through ERP from students on COs of subjects and on Faculty delivery at the end of each semester. The feedback can be accessed by Faculty and Management. Based on this feedback, faculty identifies shortcomings, and plans improvement in teaching for the next semester. This is documented in course file.

7. Expert lectures, Industrial visits, Alumni lectures, Seminars, student presentations are organized to fill the Gaps.

IMPROVEMENT IN LABORATORY EXPERIENCE

1. On the first day students are briefed about the laboratory experiments to be conducted in the laboratory courses. They are also supplied with the list of experiments.

2. For each laboratory experiment instructions about materials required, steps of the experiments, and result/observations recording and analysis are briefly described by the faculty to the students followed by actual performance by students. Efforts are made to improve the quality of experience of students in conducting the experiments.

3. Each practical class consists of 40 students, and each group has 4 students so that they can handle the equipment turn wise and perform experiment individually.

4. Students are encouraged to ask questions about any difficulty while conducting the experiment to improve the quality of experience. They are also encouraged to use modern tools for data analysis.

5. Detailed instruction manuals are prepared for each laboratory experiment depicting Aim, principles, procedures, observation tables, equations for data analysis, details of graphs to be made and schematic figures of the setup.

6. Students are instructed to write the findings of each experiment along with calculations, graphs etc. in a laboratory record file with all details and submit in the subsequent classes.

7. Faculty conducting the labs evaluate and correct student files in subsequent classes.

8. All experimental facilities are maintained in good working conditions.

SPECIAL CONSIDERATIONS FOR WEAK STUDENTS AND BRIGHT STUDENTS

1. Slow learners are identified, once, at the beginning of the semester based on CGPA of earlier semester and later based on the evaluations in mid semester examination.

2. Faculty of the Department of Chemical Engineering take personal efforts to take extra classes for the weak students which are organized in available class rooms/faculty rooms/Departmental seminar room.

3. Weak students are taken special care in tutorial classes.

4. Lectures by Alumni/Senior students are organised during the IIChE Students Chapter activity for the weak students, which is very effective.

5. Bright students are identified by their academic performance. Extra Assignments &/or sessional are designed for them to boost their knowledge.

6. Bright students are encouraged to take up Non-Credit projects throughout the course.

7. Bright students are guided to write technical papers and participate in Seminars and conferences organized by other Institutes.

8. Efforts are made to keep students engaged through various activities like quizzes, seminars, NPTEL videos, inter/departmental visits, debate on technical topics, discussion on startups, mini projects, group discussion, career counselling, alumni interactions etc.

9. The continuous assessment of assignments/tutorials/experiments/project work is done to analyze the performance of the students.

10. In every laboratory course, the students are allowed to do experiments other than the scheduled classes.

2.2 Quality of Student Capstone Project (25)

(Quality of the capstone/major project is measured in terms of consideration to factors including, but not limited to, environment, sustainability, safety, ethics, cost, type (application, product, research, review etc.) and standards. Processes related to project identification, allotment, continuous monitoring, evaluation including demonstration of working prototypes and enhancing the relevance of projects.

Mention implementation details including details of POs and PSOs addressed through the projects with justification.)

The Bachelor of Technology (BTECH) curriculum emphasizes quality undergraduate (UG) projects. Projects are allotted to VII Semester students named Minor project where they have only three credits to fulfill, and in VIII semester, they carry out project work named as Major project of ten credits with no theory subjects. The students conduct projects under the guidance of faculty members of the Department. The projects are classified as Experimental, Modeling, Simulation, Design, and Internship in nature. The Department extends all the facilities for the project work. The students are also permitted and encouraged to conduct a UG Project in Industry or other Institute of repute, under an external guide from that organization and an internal guide from the Department of Chemical Engineering.

PROJECT SELECTION/ALLOTMENT:

1. Each faculty proposes multiple project ideas.

2. Project ideas are also invited from students.

3. The students applying for a project in Industry or other Institutes also submit their proposal and are allotted an internal guide for monitoring of the project.

4. A panel consisting of faculty of the Department analyze all the proposals considering the relevance of Environment, safety, and ethics, and availability of experimental and computational facilities in the Department and finalize the list of Projects.

5. The list is notified, and students' choices for the project are asked for.

6. A group of 3-4 students is allotted in a project, considering their choice and CGPA.

CONTINUOUS MONITORING OF THE PROJECT

1. The students conducting projects in the Department of Chemical Engineering are required to be regularly present and take leave from the project guide if leaving the station.

2. The project guide monitors the project by regular discussions.

3. The UG project coordinators and Department Project Evaluation Committee (DPEC) of the Department organizes Midterm evaluation of the project, during which the students are required to present project progress seminar in the department, and submit a project progress report to the department.

END SEMESTER EVALUATION

1. The End semester evaluation is conducted at the end of the final (VIII) semester by external examiner from other reputed institutes or Industry, as approved by the Vice Chancellor.

2. The students are required to submit hard copies of the project at the end of the semester, duly certified by the guides, along with a plagiarism report.

3. The students are required to present their work in an open seminar and face a Comprehensive viva by the External Expert, in the presence of DPEC, Guide and other faculty members.

4. The students are evaluated based on parameters such as, clarity of the project report, Innovation, presentation, Project Outcome, and Project-specific Outcomes addressed. The Marking system is given as follows:

- End Sem Examination :50
- Mid Term Examination: 50

The process of analysis and evaluation of the UG Projects conducted in the Department are given below:

Examination Regulations from 2021 onwards

UG PROJECT:

Project work can be carried out, preferably independently or by a group of students not exceeding four (4). More than four students in a group shall be discouraged. Internships shall be independent. Project evaluation shall be as follows:

i. External Examiner: 50%

ii. Project Guide (s): 25 %

iii. DPEC: 25 %

TOTAL 100%

UG Project based on INTERNSHIP

In the VII semester, all students carry out their Minor project within the department. In the VIII semester, students choose the Major projects of within the department/institute or internship projects in various companies, reputed research organizations, and university of repute in India and abroad. The internship evaluation is the same as the Major project evaluations, where the internship students are evaluated in the

Mid-semester and End semester examinations.

PROJECT EVALUATION

There are four stages through which project allotment and evaluation takes place:

1. Project identification

Each student puts choice of project topics which are displayed on notice board/email from the department. At least three choices are taken from every student. Out of which one is selected by the project committee of the department on the basis of CGPA.

2. Allotment: Guides are allotted as per his/her expertise and identified domain of the students. Table A shows the process of guide allotment. List of the projects and corresponding name of students are displayed on notice board/email

Table a: Allotment of Guide

Roll No.	Name	Domain	Topics	Guide	Category (Application/ Product/ Research/ Review etc.)	Parameters (Environment, Safety, Ethics, Cost, Standards)	PO & PSOs Mapping				Justification
							PO		PSO		
							No	Level	No	Level	

3. Continuous assessment of project progress is carried out by respective guides and by mid-term progress evaluation.

4. End semester evaluation

Project evaluation consists of the following components

1. Progressive evaluation-- based on the seminar presentation progress of work is judged and necessary recommendations and suggestions to carry out further work is given to the students by guide(s), committee and faculty members at the mid of final semester

2. End semester Evaluation- Based on the report submitted and seminar presentation on the work done by the students' marks are given by External examiner, guide and DPEC. External examiner is either faculty invited from other reputed institute or Industry expert

Table b: COs of Project evaluation

CO1 Problem Identification & Analysis

CO2 Design & Research Application

CO3 Experimentation & Data Interpretation

CO4 Project Management, Teamwork & Professional Skills

CO5 Technical Communication: Report Writing & Presentation

Table c: Project report evaluation rubrics

Performance Indicators	**Excellent (Full Marks)**	**Satisfactory (Mid Marks)**	**Needs Improvement (Low Marks)**	**Max Marks**
Problem Identification & Objectives	Fully adhered (10)	Partially adhered (7)	Not adhered (5)	10
Technical Knowledge & Application	Well defined & clear (10)	Few chapters clear (7)	Not clear (5)	10
Methodology & Experimentation / Simulation	All details described (20)	Few details described (12)	Poorly described (8)	20
Project Management & Teamwork	Well discussed (10)	Discussed (7)	Poorly discussed (5)	10
Total Marks				**50**

Table d: Viva-vocational examination rubrics

Performance Indicators	**Satisfactory (Mid Marks)**	**Needs Improvement (Low Marks)**	**Max Marks**	**COs**
Application & Reasoning Ability	Some application ability, partly correct reasoning (12)	Unable to apply knowledge, incorrect reasoning (8)	20	3
Conceptual Understanding	Partial understanding, explains some aspects (7)	Poor understanding, unable to explain key aspects (5)	10	5
Communication & Confidence	Adequate but lacks fluency/clarity, moderate confidence (12)	Weak communication, unclear explanations, low confidence (8)	20	

Table e: CO-PO/PSO Attainment matrix

CO/ PO	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PSO 1**	**PSO 2**
CO1	2	3	2	2	1	2	2	1	1	1	1	2	3	2
CO2	3	2	3	2	3	1	2	1	2	1	2	2	3	3
CO3	2	2	2	3	3	1	1	1	1	1	1	2	2	3
CO4	1	1	2	1	1	1	1	2	3	2	3	2	2	2
CO5	1	1	1	1	1	1	1	1	2	3	2	2	1	1

2.3 Internship/Industrial Training (10)

(Describe process, duration, POs/PSOs addressed.)

The industrial training/internship is an integral part of the Chemical Engineering curriculum, designed to bridge theoretical knowledge with practical exposure. Thus, students must undergo Industrial training and internship during summer/winter break at industries, research laboratories/and academic institutes. With effect from the academic year 2018, the institute

made industrial training/internship compulsory for all 6 - semester students. A major change was introduced in 2024 with the implementation of the National Education Policy (NEP), wherein the credits were raised from 2 to 4.

Students undertake training in a wide range of domains, including industrial establishments, national research laboratories and reputed academic institutions. The duration of the training typically ranges from four to eight weeks, subject to the requirements of the host organization.

The institute's Training & Placement cell assists students in securing internships with industries and organisations. The department has a dedicated faculty coordinator which provides mentorship in identifying suitable organizations and facilitates the necessary administrative approvals. The selection of internships is guided by student interest, alignment with career objectives, and the availability of opportunities.

The students also have an opportunity to participate in the Immersive Summer Research Experience (ISRE) program, which was started in 2017 at Illinois Institute of Technology-Chicago. Under this program, BIT Mesra students visit top US universities such as Illinois Institute of Technology, Chicago, and Carnegie Mellon University, Pittsburgh to pursue summer internships.

As per the institute regulations effective from MO-2021, students will have to prepare a report duly certified by the Summer Training Organisation, after the completion of the summer training. The Head of the Department constitutes Evaluation Committees to conduct the Viva-Voce of the students. The breakup of marks shall be:

a. Progressive evaluation (50%): Based on Summer Training Report

b. End-semester Evaluation (50%): Based on Viva-Voce conducted in the Department by respective Committee The following table presents a category-wise summary of summer internships undertaken by students over the last three academic years:

The following table presents a category-wise summary of summer internships undertaken by students over the last three academic years:

Sl. No.	Category	Yr-2023 (%)	Yr-2024 (%)	Yr-2025 (%)
1	Industries	27	48	74.1
2	National Research Labs	5	6	4.34
3	IITs / Other Institutes	7	4	1.74
4	IIChE – Online Internship	9	6	0.86
5	International Research Internship	2	3	1.74
6	Others	50	33	17.21
Total		100	100	100

The following table presents the list of organisations and institutes where students have undertaken summer internships over the past several years:

Sl. No.	Category	Name of the Organisation
1.	Industries	1. Reliance Industries Limited 2. Indian Oil Corporation Limited 3. Hindalco Industries 4. IVL Dhunseri Petrochem Industries Pvt. Ltd. 5. Tata Steel Ltd. 6. Indian Farmers Fertiliser Cooperative Limited (IFFCO) 7. Bharat Petroleum Corporation Ltd. 8. Visakhapatnam Steel Plant 9. National Fertilizer Limited 10. Bokaro Steel Plant 11. Rashtriya Chemicals and Fertilizers Limited 12. Bhilai Steel Plant 13. MECON Ltd. 14. Oil and Natural Gas Corporation Ltd. 15. Dr. Reddy's Laboratories Ltd. 16. Oil India Limited 17. Brahmaputra Cracker and Polymer Limited 18. Hindustan Urvarak & Rasayan Limited 19. National Thermal Power Corporation 20. Steel Authority of India Limited 21. Tata Motors Limited 22. Bharat Heavy Electricals Limited 23. Welspun Corporation 24. Gallantt Ispat Limited 25. Uranium Corporation of India Limited 26. Central Coal Fields Limited 27. Jindal Power and Steel Limited 28. Bharat Coking Coal Limited
2.	National Research Labs	1. CSIR–Central Institute of Mining and Fuel Research (CSIR-CIMFR), Dhanbad 2. CSIR–Institute of Minerals and Materials Technology (CSIR-IMMT), Bhubaneswar 3. CSIR–National Metallurgical Laboratory (CSIR-NML), Jamshedpur 4. DRDO – Aeronautical Development Establishment (ADE)
3.	IITs / Other Institutes	1. IIT Guwahati 2. IIT Gandhinagar 3. IIT Ropar 4. IIT Jammu 5. IIT Kharagpur
4.	International Research Internship	1. Carnegie Mellon University, Pittsburgh, Pennsylvania, USA 2. Illinois Institute of Technology, Chicago, Illinois, USA 3. University of Guelph, Ontario, Canada

The summer internship/industrial training significantly contributes to the attainment of the following POs/PSOs: PO-1, PO-2, PO-3, PO-4, PO-5, PO-7, PO-9, PO-10, PO-12, PSO-1, PSO-2.

2.4 Seminar and Mini/Micro Projects (10)

(Describe process, POs/PSOs addressed.)

The Bachelor of Technology (BTECH) curriculum emphasizes quality undergraduate (UG) minor projects. Projects are allotted to VII Semester students named Minor project where they have three credits to fulfil.

The students conduct projects under the guidance of faculty members of the Department. The projects are classified as Experimental, modelling, Simulation and Design in nature. The Department extends all the

facilities for the research work.

PROJECT SELECTION/ALLOTMENT:

1. Each faculty proposes multiple project ideas/topics.

2. UG project coordinators analyze all the proposals considering the relevance of Environment, safety, and ethics, and availability of experimental and computational facilities in the Department and finalize the list of Projects.

3. The list is notified, and students' choices for the project are asked for.

4. A group of 3-4 students is allotted a project, considering their choice and CGPA.

CONTINUOUS MONITORING OF THE PROJECT

1. The students conducting minor projects are required to work as per the timetable and beyond the timetable as per the project requirement.

2. The project guide monitors the project by weekly and/or regular discussion.

3. The Project monitoring Committee of the Department organized the Midterm evaluation of the project, when the students are required to present the project progress in a departmental seminar.

END SEMESTER EVALUATION

1. The End semester evaluation is conducted by a panel of faculty members at the end of the semester.

2. The students are required to present their work in an open seminar.

3. The students are required to submit hard copies of the project at the end of the VII semester, duly certified by the guides, and with a plagiarism report.

4. The students are evaluated based on the clarity of the project report, completed work, Innovation, presentation, Project Outcome, and Project-specific Outcomes addressed.

Project work can be carried out, preferably independently or by a group of students not exceeding four (4). More than four students in a group shall be discouraged. Project evaluation shall be as follows:

i. Progressive Evaluation: 50 %

ii. End Semester Evaluation: 50 %

TOTAL 100%

Department Committee shall be appointed by the Head of the department. The entire process of Project Identification, allotment, and Evaluation is discussed below:

PROJECT ALLOTMENT and EVALUATION

There are four stages through which project allotment and evaluation takes place:

1. Project identification

Each student puts choice of project topics which are displayed on notice board/email from the department. At least three choices are taken from every student. Out of which one is selected by the UG project coordinators and project committee of the department on the basis of CGPA.

2. Allotment: Guides are allotted as per his/her expertise and identified domain of the students. List of the projects and corresponding name of students are displayed on notice board/email. Table a shows the process of guide allotment

Table a: Allotment of Guide

Roll No.	Name	Domain	Topics	Guide	Category (Application/ Product/ Research/ Review etc.)	Parameters (Environment, Safety, Ethics, Cost, Standards)	PO & PSOs Mapping				Justification
							PO		PSO		
							No	Level	No	Level	

3. Continuous assessment of project progress is carried out by respective guides through discussions and by midterm progressive evaluation

4. End semester evaluation

Project evaluation consists of the following components

1. Progressive evaluation-- Based on the seminar presentation progress of work is judged and necessary recommendations and suggestions to carry out further work is given to the students by guides and department faculty at the middle of the VII

50% marks are given during progressive evaluation.

2. End semester Evaluation-Based on the report submitted and seminar presentation on the work done by the students', marks are given by the guide(s) and department committee. 50% marks are assigned during End semester evaluation.

Table b: COs of Project evaluation

CO1 Problem Identification & Analysis

CO2 Design & Research Application

CO3 Experimentation & Data Interpretation

CO4 Project Management, Teamwork & Professional Skills

CO5 Technical Communication: Report Writing & Presentation

Table c: Project report evaluation rubrics

Performance Indicators	**Excellent (Full Marks)**	**Satisfactory (Mid Marks)**	**Needs Improvement (Low Marks)**	**Max Marks**
Problem Identification & Objectives	Fully adhered (10)	Partially adhered (7)	Not adhered (5)	10
Technical Knowledge & Application	Well defined & clear (10)	Few chapters clear (7)	Not clear (5)	10
Methodology & Experimentation / Simulation	All details described (20)	Few details described (12)	Poorly described (8)	20
Project Management & Teamwork	Well discussed (10)	Discussed (7)	Poorly discussed (5)	10
Total Marks				**50**

Table d: Viva-vocational examination rubrics

Performance Indicators	**Satisfactory (Mid Marks)**	**Needs Improvement (Low Marks)**	**Max Marks**	**COs**
Application & Reasoning Ability	Some application ability, partly correct reasoning (12)	Unable to apply knowledge, incorrect reasoning (8)	20	3
Conceptual Understanding	Partial understanding, explains some aspects (7)	Poor understanding, unable to explain key aspects (5)	10	5

Performance Indicators	Satisfactory (Mid Marks)	Needs Improvement (Low Marks)	Max Marks	COs
Communication Skills & Confidence	Adequate but lacks fluency/clarity, moderate confidence (12)	Weak communication, unclear explanations, low confidence (8)	20	1–5

Table e: CO-PO/PSO Attainment matrix

CO/ PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
CO1	2	3	2	2	1	2	2	1	1	1	1	2	3	2
CO2	3	2	3	2	3	1	2	1	2	1	2	2	3	3
CO3	2	2	2	3	3	1	1	1	1	1	1	2	2	3
CO4	1	1	2	1	1	1	1	2	3	2	3	2	2	2
CO5	1	1	1	1	1	1	1	1	2	3	2	2	1	1

2.5 Case Studies and Real-Life Examples (10)

(Type and complexity, POs/PSOs addressed.)

Sl. No.	Roll No.	Name of Student	Guide	Title	POs / PSOs
1	BTECH/10041/21	Saif Ahmad	Dr. Abhijit Mondal	Degradation of complete Polyethylene microplastics (LLDPE, HDPE), and Polypropylene	PO1–7, PO9–10, PO12
2	BTECH/10045/21	Rudra Nath Sinha	Dr. Abhijit Mondal	Degradation of polystyrene microplastics (PMPs) from wastewater using Novel Continuous Rotating Electro Chemical Reactor	PO1–7, PO9–10, PO12
3	BTECH/10565/21	Labani Barai	Dr. Abhijit Mondal	Degradation of complete Polyethylene microplastics (LLDPE, HDPE), and Polypropylene	PO1–7, PO9–10, PO12

4	BTECH/10042/21	Suraj R M	Dr. Arnab Karmakar	Design of two phase thermosyphon solar water heater	PO1–7, PO9–10, PO12
5	BTECH/10382/21	Ankur Niranjan	Dr. Arnab Karmakar	Design of two phase thermosyphon solar water heater	PO1–7, PO9–10, PO12
6	BTECH/10490/21	Anish Kandir	Dr. A. K. Sen	Development of silica based flame retardant material from sodium silicate	PO1–7, PO9–10, PO12
7	BTECH/10563/21	Hemant Jamuda Angaria	Dr. A. K. Sen	Development of silica based flame retardant material from sodium silicate	PO1–7, PO9–10, PO12
8	BTECH/10580/21	Shreya Mondal	Dr. Gautam Sarkhel	Development of metal-based adsorbent media for the sequestration of Total Arsenic from drinking water	PO1–7, PO9–10, PO12
9	BTECH/10692/21	Jyoti Kumari	Dr. Gautam Sarkhel	Development of metal-based adsorbent media for the sequestration of Total Arsenic from drinking water	PO1–7, PO9–10, PO12
10	BTECH/10645/21	Aditya Kumar	Dr. Sudipta Goswami	Study of mechanical properties of Epoxidized novolac and Natural Rubber blend compound	PO1–7, PO9–10, PO12
11	BTECH/10726/21	Ashish Ranjan	Dr. Sudipta Goswami	Study of mechanical properties of Epoxidized novolac and Natural Rubber blend compound	PO1–7, PO9–10, PO12
12	BTECH/10704/21	Mohit Kumar	Dr. Sudipta Goswami	Preparation and characterization of Epoxy/epoxidized novolac blend based nanocomposite	PO1–7, PO9–10, PO12

13	BTECH/10706/21	Annocent Marandi	Dr. Sudipta Goswami	Preparation and characterization of Epoxy/epoxidized novolac blend based nanocomposite	PO1–7, PO9–10, PO12
14	BTECH/10336/21	Vislavath Praharsha	IIT Kharagpur	Sustainable solutions—revolutionizing waste management	PO1–7, PO9–10, PO12
15	BTECH/10255/21	Soren Mrinalini	CSIR-Central Ceramic & Glass Research, Kolkata	Preparation of Alumina fibers for high temperature applications	PO1–7, PO9–10, PO12
16	BTECH/10337/21	Bharadwaj V Pillai	IIT Hyderabad	Storage Stability Tests on Aviation Fuels	PO1–7, PO9–10, PO12
17	BTECH/10252/21	Yukta Nidhi	Indo Bell	Fibre Reinforced silica Aerogel Blanket Preparation	PO1–7, PO9–10, PO12
18	BTECH/10334/21	Mohit Soni	TERI School of Advanced Studies, New Delhi	Closing the loop: strategies for sustainable collection and reuse of rigid packaging materials in oil industries	PO1–8, PO12
19	BTECH/10036/21	Ayush Kumar	Maruti Suzuki India Limited	Effect of ethanol mixed fuel on fuel circuit components	PO1–7, PO9–10, PO12
20	BTECH/10488/21	Gautam Kumar Mishra	Matix Fertilisers and Chemicals	Industrial Exposure and Optimization of Steam Methane Reforming in Ammonia Plant	PO1–7, PO9–10, PO12
21	BTECH/10769/21	Shem Vishal	Tata Steel	Development and Characterization of New	PO1–7, PO9–

				Advanced Functional Coatings for galvanized steel	10, PO12
22	BTECH/10672/21	Shivam Singh	Tata Steel	Availability Improvements of Heat Exchangers	PO1–7, PO9–10, PO12

2.6 SWAYAM/NPTEL/MOOC/Self Learning (10)

(Number of students registered, certification and POs/PSOs addressed.)

With effect from the academic year 2018, the institute has incorporated a structured framework for the inclusion of MOOC courses in the curriculum. As per the provision, students may opt for MOOC-1 and MOOC-2 in place of Open Elective-3 and Open Elective-4, respectively in seventh (7) semester. In 2020, the institute further revised the curriculum framework by permitting students to undertake four MOOC courses, one in each semester from 4 to the 7 semester, in place of the corresponding open electives. Each MOOC course carries weightage of 3-credits.

The institute has formulated guidelines for students regarding the selection of MOOC courses. Based on these guidelines, the department faculty MOOC coordinator advises students. The main features of the guidelines are:

1. Students may enroll in MOOC courses only offered by NPTEL through the Swayam Portal.

2. To fulfill the requirement of 3 credits, students must enroll in 12-week MOOC courses. Courses of shorter duration will not be eligible for credit transfer.

3. Credit transfer will be effected only upon the successful completion of the course and submission of the relevant certificate.

The following table presents a summary of MOOC courses completed by students over the last three academic years:

Sl. No.	Semester	Batch	Number of Student Registered / Certified
1	MO-22	K-19	06
2	SP-23	K-20	27
3	SP-23	K-21	10
4	MO-23	K-20	36
5	MO-23	K-21	80
6	SP-24	K-21	104
7	SP-24	K-22	100
8	MO-24	K-21	96
9	MO-24	K-22	114
10	SP-25	K-22	116
11	SP-25	K-23	82

At the end of each semester, the Department faculty MOOC coordinator conducts an analysis in consultation with the Head of the Department. The analysis, particularly with respect to the POs/PSOs addressed, is documented and maintained in departmental records. A complete list of students who have successfully completed MOOC course, along with their certificates, is also kept in the departmental files.

2.7 Solving Complex Engineering Problems Incorporating Sustainability Goals (20)

(Provide details of core courses (Project based learning, problem-based learning), mini projects, integrated design projects, capstone projects, hackathon or any other activity-based learning towards solving complex engineering problems targeting relevant SDGs.)

Sl. No.	Roll No.	Name of Student	Guide	Title	POs / PSOs	SDG
1	BTECH/10041/21	Saif Ahmad	Dr. Abhijit Mondal	Degradation of complete Polyethylene microplastics (LLDPE, HDPE), and Polypropylene	PO1–7, PO9–10, PO12	SDG 12: Responsible Consumption and Production
2	BTECH/10045/21	Rudra Nath Sinha	Dr. Abhijit Mondal	Degradation of polystyrene microplastics (PMPs) from wastewater using Novel Continuous Rotating Electro Chemical Reactor	PO1–7, PO9–10, PO12	SDG 6: Clean Water and Sanitation, SDG 12: Responsible Consumption
3	BTECH/10565/21	Labani Barai	Dr. Abhijit Mondal	Degradation of complete Polyethylene microplastics (LLDPE, HDPE), and Polypropylene	PO1–7, PO9–10, PO12	SDG 6: Clean Water and Sanitation, SDG 12: Responsible Consumption
4	BTECH/10042/21	Suraj R M	Dr. Arnab Karmakar	Design of two phase thermosyphon solar water heater	PO1–7, PO9–10, PO12	SDG 6: Clean Water and Sanitation
5	BTECH/10382/21	Ankur Niranjan	Dr. Arnab Karmakar	Design of two phase thermosyphon solar water heater	PO1–7, PO9–10, PO12	SDG 6: Clean Water and Sanitation
6	BTECH/10490/21	Anish Kandir	Dr. A. K. Sen	Development of silica based flame retardant material from sodium silicate	PO1–7, PO9–10, PO12	SDG 9: Industry, Innovation and Infrastructure
7	BTECH/10563/21	Hemant Jamuda Angaria	Dr. A. K. Sen	Development of silica based flame retardant material from sodium silicate	PO1–7, PO9–10, PO12	SDG 9: Industry, Innovation and Infrastructure
8	BTECH/10580/21	Shreya Mondal	Dr. Gautam Sarkhel	Development of metal-based adsorbent media for the sequestration of Total Arsenic from drinking water	PO1–7, PO9–10, PO12	SDG 6: Clean Water and Sanitation
9	BTECH/10692/21	Jyoti Kumari	Dr. Gautam Sarkhel	Development of metal-based adsorbent media for the sequestration of	PO1–7, PO9–10, PO12	SDG 6: Clean Water and Sanitation

				Total Arsenic from drinking water		
10	BTECH/10645/21	Aditya Kumar	Dr. Sudipta Goswami	Study of mechanical properties of Epoxidized novolac and Natural Rubber blend compound	PO1–7, PO9–10, PO12	SDG 9: Industry, Innovation and Infrastructure
11	BTECH/10726/21	Ashish Ranjan	Dr. Sudipta Goswami	Study of mechanical properties of Epoxidized novolac and Natural Rubber blend compound	PO1–7, PO9–10, PO12	SDG 9: Industry, Innovation and Infrastructure
12	BTECH/10704/21	Mohit Kumar	Dr. Sudipta Goswami	Preparation and characterization of Epoxy/epoxidized novolac blend based nanocomposite	PO1–7, PO9–10, PO12	SDG 9: Industry, Innovation and Infrastructure
13	BTECH/10706/21	Annocent Marandi	Dr. Sudipta Goswami	Preparation and characterization of Epoxy/epoxidized novolac blend based nanocomposite	PO1–7, PO9–10, PO12	SDG 9: Industry, Innovation and Infrastructure
14	BTECH/10336/21	Vislavath Praharsha	IIT Kharagpur	Sustainable solutions—revolutionizing waste management	PO1–7, PO9–10, PO12	SDG 3: Good Health and Well-being, SDG 9: Industry, Innovation and Infrastructure
15	BTECH/10255/21	Soren Mrinalini	CSIR-Central Ceramic & Glass Research, Kolkata	Preparation of Alumina fibers for high temperature applications	PO1–7, PO9–10, PO12	SDG 9: Industry, Innovation and Infrastructure
16	BTECH/10337/21	Bharadwaj V Pillai	IIT Hyderabad	Storage Stability Tests on Aviation Fuels	PO1–7, PO9–10, PO12	SDG 7: Affordable and Clean Energy
17	BTECH/10252/21	Yukta Nidhi	Indo Bell	Fibre Reinforced silica Aerogel Blanket Preparation	PO1–7, PO9–10, PO12	SDG 9: Industry, Innovation and Infrastructure
18	BTECH/10334/21	Mohit Soni	TERI School of Advanced Studies, New Delhi	Closing the loop: strategies for sustainable collection and reuse of rigid packaging materials in oil industries	PO1–8, PO12	SDG 9: Industry, Innovation and Infrastructure
19	BTECH/10036/21	Ayush Kumar	Maruti Suzuki India Limited	Effect of ethanol mixed fuel on fuel circuit components	PO1–7, PO9–10, PO12	SDG 7: Affordable and Clean Energy
20	BTECH/10488/21	Gautam Kumar Mishra	Matix Fertilisers and Chemicals	Industrial Exposure and Optimization of Steam Methane Reforming in Ammonia Plant	PO1–7, PO9–10, PO12	SDG 7: Affordable and Clean Energy

21	BTECH/10769/21	Shem Vishal	Tata Steel	Development and Characterization of New Advanced Functional Coatings for galvanized steel	PO1–7, PO9–10, PO12	SDG 9: Industry, Innovation and Infrastructure
22	BTECH/10672/21	Shivam Singh	Tata Steel	Availability Improvements of Heat Exchangers	PO1–7, PO9–10, PO12	SDG 9: Industry, Innovation and Infrastructure
33	BTECH/10047/21	Suman Hansdah	Dr. Iman Sengupta	Synthesis and composite of reduced graphene oxide and layered double hydroxide in the application of energy storage	PO1-PO12	SDG 7: Affordable and Clean Energy
34	BTECH/10247/21	Saurav Sinha	Dr. Aniruddha Deb	Detection of UTI using ML	PO1-PO12	SDG 3: Good Health and Well-being
35	BTECH/10629/21	Vivek Kumar Bauri	Dr. Aniruddha Deb	Evaluation of machine learning models in Liver Disease Prediction	PO1-PO12	SDG 3: Good Health and Well-being
36	BTECH/10752/21	Tejaswini Kumari	Dr. Aniruddha Deb	ASYMMETRIC WAVE-DRIVEN DYNAMICS OF DNA FOR FASTER SEGREGATION THROUGH NANOPOROUS HYDROGELS	PO1-PO12	SDG 9: Industry, Innovation and Infrastructure
37	BTECH/10768/21	Apurva Jha	Dr. Aniruddha Deb	ASYMMETRIC WAVE-DRIVEN DYNAMICS OF DNA FOR FASTER SEGREGATION THROUGH NANOPOROUS HYDROGELS	PO1-PO12	SDG 9: Industry, Innovation and Infrastructure
38	BTECH/10794/21	Archita Karmakar	Dr. Aniruddha Deb	ASYMMETRIC WAVE-DRIVEN DYNAMICS OF DNA FOR FASTER SEGREGATION THROUGH NANOPOROUS HYDROGELS	PO1-PO12	SDG 9: Industry, Innovation and Infrastructure
39	BTECH/10645/21	Aditya Kumar	Dr. Sudipta Goswami	Study of mechanical properties of Epoxidized novolac and Natural Rubber blend compound	PO1-PO12	SDG 9: Industry, Innovation and Infrastructure
40	BTECH/10726/21	Ashish Ranjan	Dr. Sudipta Goswami	Study of mechanical properties of Epoxidized novolac and Natural Rubber blend compound	PO1-PO12	SDG 9: Industry, Innovation and Infrastructure
41	BTECH/10704/21	Mohit Kumar	Dr. Sudipta Goswami	Preparation and characterization of	PO1-PO12	SDG 9: Industry,

				Epoxy/epoxidized novolac blend based nanocomposite		Innovation and Infrastructure
42	BTECH/10706/21	Annocent Marandi	Dr. Sudipta Goswami	Preparation and characterization of Epoxy/epoxidized novolac blend based nanocomposite	PO1-PO12	SDG 9: Industry, Innovation and Infrastructure
43	BTECH/10336/21	Vislavath Praharsha	IIT Kharagpur	Sustainable solutions—revolutionizing waste management	PO1-PO12	SDG 3: Good Health and Well-being, SDG 9: Industry, Innovation and Infrastructure
44	BTECH/10777/21	Sarthak Sanidhya	BIT Patna	Physicochemical analysis of Surface Water and its suitability with Various Purposes	PO1-PO12	SDG 9: Industry, Innovation and Infrastructure
45	BTECH/10255/21	Soren Mrinalini	CSIR-Central Ceramic & Glass Research, Kolkata	Preparation of Alumina fibers for high temperature applications	PO1-PO12	SDG 9: Industry, Innovation and Infrastructure
46	BTECH/10337/21	Bharadwaj V Pillai	IIT Hyderabad	Storage Stability Tests on Aviation Fuels	PO1-PO12	SDG 7: Affordable and Clean Energy
47	BTECH/10252/21	Yukta Nidhi	Indo Bell	Fibre Reinforced silica Aerogel Blanket Preparation	PO1-PO12	SDG 9: Industry, Innovation and Infrastructure
48	BTECH/10334/21	Mohit Soni	TERI School of Advanced Studies, New Delhi	Closing the loop: strategies for sustainable collection and reuse of rigid packaging materials in oil industries	PO1-PO12	SDG 9: Industry, Innovation and Infrastructure
49	BTECH/10036/21	Ayush Kumar	Maruti Suzuki India Limited	Effect of ethanol mixed fuel on fuel circuit components	PO1-PO12	SDG 7: Affordable and Clean Energy
50	BTECH/10488/21	Gautam Kumar Mishra	Matix Fertilisers and Chemicals	Industrial Exposure and Optimization of Steam Methane Reforming in Ammonia Plant	PO1-PO12	SDG 7: Affordable and Clean Energy
51	BTECH/10769/21	Shem Vishal	Tata Steel	Development and Characterization of New Advanced Functional Coatings for galvanized steel	PO1-PO12	SDG 9: Industry, Innovation and Infrastructure
52	BTECH/10672/21	Shivam Singh	Tata Steel	Availability Improvements of Heat Exchangers	PO1-PO12	SDG 9: Industry, Innovation and Infrastructure

2.8 Steps Taken for Enhancing Industry Institute Partnerships (15)

(Provide details of partial delivery of courses, industry supported labs, industry offered short-term programs/training etc.)

According to the curriculum, major project work is scheduled in the 8th semester, and some students are fortunate to work directly with industries during this period. The table shows the list of the students who worked in SP-2025 with industries like Indo bell, Maruti Suzuki India Limited, Matix Fertilisers & Chemicals and Tata Steel.

Sl. No.	Roll No.	Name of Student	Industry	Project Title
1	BTECH/10252/21	Yukta Nidhi	Indo Bell	Fibre Reinforced silica Aerogel Blanket Preparation
2	BTECH/10036/21	Ayush Kumar	Maruti Suzuki India Limited	Effect of ethanol mixed fuel on fuel circuit components
3	BTECH/10488/21	Gautam Kumar Mishra	Matix Fertilisers and Chemicals	Industrial Exposure and Optimization of Steam Methane Reforming in Ammonia Plant
4	BTECH/10769/21	Shem Vishal	Tata Steel	Development and Characterization of New Advanced Functional Coatings for galvanized steel

Students also have the opportunity to undergo internship at the end of 6th semester, with most opting for industrial training/internships. The table below shows the list of the students completed their industrial internship/training during the summer of 2024.

Sl. No.	Roll No.	Student Name	Organization
1	BTECH/10350/21	Souvanik Ghosh	RELIANCE INDUSTRIES LIMITED
2	BTECH/10351/21	Srishti Choudhary	RELIANCE INDUSTRIES LIMITED
3	BTECH/10344/21	Bodhisatwa Sinha	RELIANCE INDUSTRIES LIMITED
4	BTECH/10772/21	Tushar Aryan	RELIANCE INDUSTRIES LIMITED
5	BTECH/10248/21	Kumar Ashish	Indian Oil Corporation Limited, Mathura Refinery
6	BTECH/10346/21	Kishlay Kumar	Indian Oil Corporation Limited, Barauni Refinery
7	BTECH/10337/21	Bharadwaj V Pillai	Bharat Petroleum Corporation Ltd., Kochi Refinery
8	BTECH/10041/21	Saif Ahmad	IVL Dhunseri Petrochem Industries Pvt. Ltd., Haldia
9	BTECH/10045/21	Rudra Nath Sinha	IVL Dhunseri Petrochem Industries Pvt. Ltd., Haldia
10	BTECH/10752/21	Tejaswini Kumari	IVL Dhunseri Petrochem Industries Pvt. Ltd.
11	BTECH/10652/21	Manindra Kumar	IVL Dhunseri Petrochem Industries Pvt. Ltd.
12	BTECH/10036/21	Ayush Kumar	Hindalco Industries Limited, Muri Works
13	BTECH/10336/21	Vislavath Praharsha	Visakhapatnam Steel Plant
14	BTECH/10334/21	Mohit S Soni	Birla Copper, Hindalco Industries Limited
15	BTECH/10249/21	Som Narayan Jha	Tata Steel Ltd., Jamshedpur
16	BTECH/10046/21	Jayendra Vinayak Shahi	Tata Steel Ltd., Jamshedpur
17	BTECH/10463/21	Srishti Singh	Tata Steel
18	BTECH/10580/21	Shreya Mondal	Tata Steel Ltd., Jamshedpur
19	BTECH/10628/21	Abhiraj Karan	Tata Steel Ltd., Jamshedpur
20	BTECH/10769/21	Shem Vishal	Tata Steel Ltd., Jamshedpur
21	BTECH/10692/21	Jyoti Kumari	Tata Steel Ltd., Jamshedpur
22	BTECH/10733/21	Dev Kumar	Tata Steel Ltd., Jamshedpur
23	BTECH/10750/21	Mohammad Saarim Sohail	Tata Steel Ltd., Jamshedpur

24	BTECH/10256/21	Virendra Vikram Singh	IFFCO Kalol Unit
25	BTECH/10488/21	Gautam Kumar Mishra	National Fertilizer Limited, Nangal Unit
26	BTECH/10564/21	Rishabh Kumar Jha	Rashtriya Chemicals and Fertilizers Limited, Mumbai
27	BTECH/10252/21	Yukta Nidhi	CSIR-CIMFR, Dhanbad
28	BTECH/10257/21	Shayan Hamza	CSIR-CIMFR, Dhanbad
29	BTECH/10489/21	Mayank Giri	CSIR-CIMFR, Dhanbad
30	BTECH/10773/21	Rahul Sharma	CSIR-CIMFR, Dhanbad
31	BTECH/10726/21	Ashish Ranjan	CSIR-CIMFR, Dhanbad
32	BTECH/10250/21	Aayush Bardhan	Linde, Haldia
33	BTECH/10261/21	Bhavya Kriti	Central Coalfields Limited, Ranchi
34	BTECH/10247/21	Saurav Sinha	Central Coalfields Limited
35	BTECH/10042/21	Suraj R M	NTPC Limited, Kahalgaon
36	BTECH/10254/21	Meghna Singh	Tata Cummins Pvt. Ltd., Jamshedpur
37	BTECH/10382/21	Ankur Niranjan	CMPDI, Ranchi
38	BTECH/10563/21	Hemant Jamuda Angaria	Bokaro Steel Plant
39	BTECH/10567/21	Manak Singh	Bokaro Steel Plant
40	BTECH/10706/21	Annocent Marandi	Bokaro Steel Plant
41	BTECH/10778/21	Rahul Kumar Suman	Oil and Natural Gas Corporation Ltd., CBM Asset Bokaro
42	BTECH/10583/21	Md Manzar Ansari	Hindalco Industries Ltd., Muri Works
43	BTECH/10590/21	Abhishek Choudhary	UCIL, Jaduguda
44	BTECH/10651/21	Hemant Kumar Das	Bhilai Steel Plant
45	BTECH/10672/21	Shivam Singh	MECON Ltd., Ranchi
46	BTECH/10794/21	Archita Karmakar	MECON Ltd., Ranchi
47	BTECH/10768/21	Apurva Jha	MECON Ltd., Ranchi
48	BTECH/10734/21	Vinamr Saksena	Dr. Reddy's Laboratories Ltd.
49	BTECH/10771/21	Abhishek Chand	HIL Limited
50	BTECH/10815/21	Dhiraj Kumar	NTPC, Kahalgaon
51	BTECH/10490/21	Anish Kandir	NTPC, Kahalgaon

3 OUTCOME-BASED ASSESSMENT (120)

3.1 Evaluation of Continuous Assessment: Assignments, Unit Tests, Mid-Term, etc. (10)

(Describe the process of evaluation followed during continuous assessment to maintain quality of assessment; constructive alignment of questions with COs and hence POs/ PSOs. Details to be kept in course files for evaluation.)

1. The B.Tech (Chemical Engineering) programme at BIT Mesra consists of 168 credits distributed across various theory and laboratory courses. Each theory course typically carries a 3–4 credit load and is divided into five modules, with each module spanning around 8–10 lecture hours is defined with specific Course Outcomes (COs).
2. The assessment framework includes Progressive Evaluation (Continuous Assessment – 25% weightage), Mid-Semester Examination (25%), End-Semester Examination (50%). For theory courses, continuous assessment consists of two quizzes (Quiz 1 before the mid-semester ex after), assignments, and classroom interactions.
3. . Evaluation Methods: Quizzes (10% each): Quiz 1 is conducted after completion of 1–2 modules, while Quiz 2 is held later in the semester. Questions are mapped to COs, and marks obtained are used to assess attainment; Assesment (5%): Assessment marks are given by differen as assignments, seminars, surpirse tests, attandance, classroom interactions etc. at the discretion of the individual faculty. Mid-Semester Examination (25%): Typically consists of five structured questions (with sub-parts) covering relevant modules, with each question explicitly m Evaluation of Laboratory courses are based on progressive evaluation of 60% and End semster exam of 40% .
4. The attainment level for each student is calculated by combining the scores from Continuous Assessment, Mid-Semester, and End-Semester Examinations. These attainment levels are categorized on a 3-point scale: Low (≤44.99%), Medium (45–64.99%), High (≥65%).
5. . Since all COs are mapped to Program Outcomes (POs) and Program Specific Outcomes (PSOs), the process ensures that student performance in each course contributes systematically to the attainment of the overall outcome-based B.Tech (Chemical Engineering) programme.

3.2 Evaluation of the Semester End Exam (SEE) Question Paper (10)

(Describe the process of setting of SEE papers & their evaluation to maintain quality of assessment, constructive alignment of questions with COs and POs/PSOs. Details to be kept in course files for evaluation.)

The End-Semester Examination carries a 50% weightage of the total course evaluation. Question papers are designed to cover the entire syllabus of the course, incorporating different levels of Bloom'sTaxonomy to test knowledge, understanding, application, and higher-order problem-solving skills. Typically, five main questions (with sub-parts) are included to ensure representation of all modules. Eachquestion is carefully mapped to the respective Course Outcomes (COs), and the maximum marks for each are clearly indicated on the question paper.

- Students' responses are evaluated as per the defined marking scheme, and the marks obtained are recorded in departmental records. These marks are then tabulated (using Excel or equivalent tools) tocalculate percentage attainment of each CO through the SEE.

- The final attainment of each student for every CO is computed by combining scores from Continuous Assessment (Quizzes, Assignments), Mid-Semester Examination, and End-Semester Examination. Theconsolidated attainment is categorized on a 3-point scale:

    - Low (≤44.99%)
    - Medium (45–64.99%)
    - High (≥65%)

As all COs are systematically mapped to Program Outcomes (POs) and Program Specific Outcomes (PSOs), this structured evaluation ensures that the B.Tech (Chemical Engineering) programme achieves itsoutcome-based assessment objectives effectively.

3.3 Evaluation of Laboratory Work and Workshop (Continuous and SEE) (10)
(Provide details of rubrics used to assess learnings in laboratories and workshops linking with COs and POs/PSOs targeted. Evidence of student assessments through rubrics to be kept in course files for evaluation.)

This structured evaluation ensures that laboratory learning not only develops experimental and analytical skills but also strengthens the attainment of COs, POs, and PSOs of the B.Tech (Chemical Engineering)programme.

1. Laboratory and workshop courses in the B.Tech (Chemical Engineering) programme carry their own course codes, with a credit weightage typically 50% of the corresponding theory course. While the credits are half, the contact hours are neaensure adequate hands-on exposure. Assessment of laboratory courses involves multiple components: two quizzes (Quiz 1 before the End-Semester Examination and Quiz 2 during/alongside the End-Semester Examination), continuous laboratory performance in each experiment, viva-voce for every experiment, and timely submission of laboratory records. Marks awarded for each component are mapped to the respective Course Outcomes (COs), ensuring constructive alignment.
2. At the conclusion of the course, students submit their Lab Records to the concerned faculty, which are evaluated along with quiz scores, viva, and practical performance. The attainment of each student for every CO is calculated from Quiz 1Record, Viva, and End-Semester Lab Examination. The consolidated attainment levels are then classified on a 3-point scale:
    - Low (≤44.99%)
    - Medium (45–64.99%)
    - High (≥65%)

3.4 Evaluation of Industrial Training/ Internship (Continuous and SEE) (10)

(Provide details of rubrics used to assess learnings in internships/industrial trainings linking POs/PSOs targeted for attainment. Evidence of student assessments through rubrics to be kept in course files for evaluation.)

Project Report Evaluation Rubrics :

Performance Indicators	Excellent (Full Marks)	Satisfactory (Mid Marks)	Needs Improvement (Low Marks)	Max Marks	Evaluators Score	COs
Report Format	Fully adhered (10)	Partially adhered (7)	Not adhered (5)	10		1
Clarity & chapter organization	Well defined & clear (10)	Few chapters clear (7)	Not clear (5)	10		1
Description of project details	All details described(10)	Few details described (7)	Poorly described (5)	10		2
Discussion of results &conclusion	Well discussed (15)	Discussed (12)	Poorly discussed (8)	15		3
References	Fully appropriate (5)	Partially appropriate (3)	Inappropriate (2)	5		1

Viva-Voce Evaluation Rubrics:

Criteria	Excellent (Full Marks)	Satisfactory (Mid Marks)	Needs Improvement (Low Marks)	Max Marks	Evaluators Score	COs
Knowledge of Fundamentals	Strong grasp, clear explanations, no major errors (10)	Understands concepts but with minor gaps(7)	Weak understanding, many errors (5)	10		2
Application of Knowledge (Problem-Solving &Analysis)	Applies theory effectively to real-world problems (10)	Some application ability, partly correct reasoning (7)	Unable to apply knowledge, incorrect reasoning (5)	10		2
Technical Depth (Project/Internship Understanding)	Excellent understanding of objectives, methods, tools, outcomes (10)	Partial understanding, explains some aspects (7)	Poor understanding, unable to explain key aspects (5)	10		3
Communication Skills	Fluent explanations, appropriate technical terms, confident answers (8)	Adequate but lacks fluency/clarity, moderate confidence (6)	Weak communication, unclear explanations, low confidence (4)	8		4
Confidence & Attitude	Highly confident, enthusiastic, professional(6)	Moderately confident, some hesitation (4)	Nervous, lacks confidence, unprofessional(2)	6		4
Overall Impression (Creativity, and Critical Thinking)	Shows originality, creativity, independent thinking (6)	Some originality and critical thinking (4)	Little originality, dependent on others (2)	6		5

COs	Description
CO1	Demonstrate the ability to prepare and present a structured technical report with clarity, organization, and proper referencing.
CO2	Apply fundamental engineering knowledge and problem-solving skills to analyze and interpret project/internship-related tasks.
CO3	Exhibit technical depth and comprehensive understanding of the project/internship work, including discussion of results andconclusions.
CO4	Communicate effectively through written and oral presentations, demonstrating confidence and professional attitude.
CO5	Display creativity and critical thinking in project execution

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	0	0	2	1	0	0	1	0	3	1	2	2	0	0
CO2	3	3	2	2	2	1	0	0	0	2	1	3	3	2	0
CO3	3	2	2	3	2	0	0	1	0	2	0	3	3	2	3
CO4	1	0	0	0	0	1	0	2	2	3	0	2	1	0	0
CO5	2	2	3	2	2	0	0	0	1	2	2	3	2	3	2

3.5 Evaluation of Projects (20)

(Provide details of rubrics used to assess learnings in projects linking POs/PSOs targeted for attainment. Evidence of student assessments through rubrics to be kept in course files for evaluation.)

Project evaluation consists of the following components

1. Progressive evaluation-- based on the seminar presentation progress of work is judged and necessary recommendations and suggestions to carry out further work is given to the students by internalexaminer at the mid of final semester.
2. End semester Evaluation- 100 Marks based on the report submitted and seminar presentation on the work done by the students' marks is given by internal examiner as well as external examiner-internalexaminer is guide himself/herself and external examiner is either industry representative /faculty invited from another institute at the end of eighth semester.

COs of Project evaluation

CO1 Problem Identification & Analysis
CO2 Design & Research Application
CO3 Experimentation & Data Interpretation
CO4 Project Management, Teamwork & Professional Skills
CO5 Technical Communication: Report Writing & Presentation

Project report evaluation rubrics

Performance Indicators	**Excellent (Full Marks)**	**Satisfactory (Mid marks)**	**Needs Improvement (Low Marks)**	**Max Marks**
Problem identification and objectives	Fully Adhered(10)	Partially adhered (7)	Not adhered (5)	10
Technical Knowledge and application	Well adhered and Clear (10)	Few Chapters Clear (10)	Not Clear(10)	10
Methodology and Experimentation/Simulation	All details Described(20)	Few Details described(12)	Poorly described (8)	20
Project/management and team work	Well discussed(10)	Discussed(7)	Poorly Discussed(5)	10
Total Marks				50

Viva-vocational examination rubrics

Satisfactory (Mid Marks)	**Needs improvement (LOW Marks)**	**Max Marks**	**COs**
Some application ability, partly correct reasoning (12)	Unable to apply knowledge, incorrect reasoning (8)	20	3
Partial understanding, explains some aspects (7)	Poor understanding, unable to explain key aspects (5)	10	5
Adequate but lacks fluency/clarity, moderate confidence (12)	Weak communication, unclear explanations, low confidence (8)	20	1-5
		50	

CO-PO/PSO Attainment matrix

CO/PO	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PSO1**	**PSO2**
CO1	2	3	2	2	1	2	2	1	1	1	1	2	3	2
CO2	3	2	3	2	3	1	2	1	2	1	2	2	3	3
CO3	2	2	2	3	3	1	1	1	1	1	1	2	2	3
CO4	1	1	2	1	1	1	1	2	3	2	3	2	2	2
CO5	1	1	1	1	1	1	1	1	2	3	2	2	1	1

3.6 Evidence of Addressing Sustainable Development Goals (SDG) (10)

(Provide details of student work carried out to meet sustainable development goals such as research work, project work, student activities etc. Evidence in the form of a portfolio to be made available during the visit.)

Sl No.	Roll No.	Name of The Student	Guide	Title [Mention if with industry Collaboration]	SDG
1	BTECH/10041/21	Saif Ahmad	Dr. Abhijit Mondal	Degradation of complete Polyethylene microplastics(L	SDG 12: Responsible Consumption and Production

				LDPE, HDPE), and Polypropylene	
2	BTECH/10045/21	Rudra nath Sinha	Dr. Abhijit Mondal	Degradation of polystyrene microplastics (PMPs) fromwastewater using Novel Continuous Rotating Electro-ChemicalReactor	SDG 6: Clean Water and Sanitation, SDG 12: Responsible Consum
3	BTECH/10565/21	LABANI BARAI			SDG 6: Clean Water and Sanitation, SDG 12: Responsible Consum
4	BTECH/10651/21	HEMANT KUMAR DAS	Dr.Arnab karmakar	Experimental Study of Thermal Performance in a two phaseThermosyphon Loop	SDG 6: Clean Water and Sanitation
5	BTECH/10038/21	Anubhav Prakash Srivastava			SDG 6: Clean Water and Sanitation
6	BTECH/10042/21	Suraj R M	Dr. Arnab Karmakar	Design of two phase thermosyphon solar water heater	SDG 6: Clean Water and Sanitation
7	BTECH/10382/21	Ankur Niranjan			SDG 6: Clean Water and Sanitation
8	BTech/10335/21	Ayush Prakash	Dr. Arnab Karmakar	Analysis of bubble dynamics in a Two Phase thermo-syphonloop	SDG 6: Clean Water and Sanitation
9	BTECH/10628/21	Abhiraj Karan	Dr. Swarupkumar Y. Jejurkar	Dynamics of laminar air jet loaded with particles	SDG 9: Industry, Innovation and Infrastructure
10	BTECh/10773/21	Rahul Sharma	Dr. Swarupkumar Y. Jejurkar	Momentum Transfer and Fluidizability of Geldart C Powder	SDG 9: Industry, Innovation and Infrastructure
11	BTECH/10258/21	Ankita Singh	Dr.Anand Bharti	Molecular Dynamics Simulation study of Carbon Dioxide solubility in Ketones	SDG 13: Climate Action
12	BTECH/10043/21	Rishav Mishra	Dr. Sangram Roy	Computational study of CO2 adsorption with MOFs	SDG 7: Affordable and Clean Energy
13	BTECH/10766/21	Vaibhaw Kumar			SDG 7: Affordable and Clean Energy
14	BTECH/10350/21	Souvanik Ghosh	Dr. Sangram Roy	CFD Modelling of ethanol steam reforming for production ofhydrogen	SDG 7: Affordable and Clean Energy
15	BTECH/10750/21	Mohammad Saarim Sohail	Dr. Sangram Roy	Investigation of wet particle drying process in a fluidized	SDG 7: Affordable and Clean Energy

				beddryer by CFD simulation and experimental measurement	
16	BTECH/10046/21	Jayendra Vinayak Shahi	Dr. Debasree Ghosh	Numerical simulation of combustion of coke oven gas	SDG 7: Affordable and Clean Energy
17	BTECH/10564/21	RISHABH KUMAR JHA	Dr. Debasree Ghosh	CFD ANALYSIS OF PHASE CHANGE MATERIAL FOR LATENTHEAT THERMAL ENERGY STORAGE IN CONDENSER ANDPREHEATER OF REFRIGERATION SYSTEM	SDG 7: Affordable and Clean Energy
18	Btech/10734/21	Vinamr Saksena			SDG 7: Affordable and Clean Energy
19	BTECH/10771/21	ABHISHEK CHAND	Dr. Debashree Gosh	Effect of temperature on combustion of coke oven gas usingAspen Plus	SDG 7: Affordable and Clean Energy
20	BTECH/10815/21	Dhiraj Kumar	Dr. Sangram Roy	Data-driven predict CFD solutions	SDG 9: Industry, Innovation and Infrastructure
21	BTECH/10346/21	kishlay kumar	Dr. Pulak Dutta	Simulation of Radiation Interaction with Chemical Samples UsingGeant4	SDG 9: Industry, Innovation and Infrastructure
22	BTECH/10677/21	Adarsh Saxena			SDG 9: Industry, Innovation and Infrastructure
23	BTECH/10583/21	Md Manzar Ansari			SDG 9: Industry, Innovation and Infrastructure
24	BTECH/10261/21	Bhavya Kirti	Dr. Pulak Dutta	Prediction of viscoelastic behaviour of Na ionomer modified PPSblend by Machine learning	SDG 9: Industry, Innovation and Infrastructure
25	BTECH/10256/21	Virendra Singh	Dr. GT Mohanraj	Prediction of adsorption efficiency of various adsorbents towardstoxic ions by ML models	SDG 6: Clean Water and Sanitation
26	BTECH/10630/21	Chandra Prakash Pandey	Dr. G.T.Mohanraj	Prediction of adsorption efficiency of	SDG 6: Clean Water and Sanitation

27	BTECH/10652/21	Manindra Kumar		various adsorbents towardstoxic ionsÂ byÂ MLÂ models	SDG 6: Clean Water and Sanitation
28	BTECH/10490/21	Anish Kandir	Dr. A. K. Sen	Development of silica based flame retardant material fromsodium silicate	SDG 9: Industry, Innovation and Infrastructure
29	BTECH/10563/21	Hemant Jamuda Angaria			SDG 9: Industry, Innovation and Infrastructure
30	BTECH/10580/21	Shreya Mondal	Dr. Gautam Sarkhel	Developement of metal based adsorbent media for thesequestration of Total Arsenic from drinking water	SDG 6: Clean Water and Sanitation
31	BTECH/10692/21	Jyoti Kumari			SDG 6: Clean Water and Sanitation
32	BTECH/10767/21	Umang raj	Dr. Sudeepan Jayapalan	IMPACT OF REPEATED RECYCLING ON ASA PROPERTIES	SDG 9: Industry, Innovation and Infrastructure
33	BTECH/10047/21	Suman Hansdah	Dr. Iman Sengupta	Synthesis and composite of reduced graphene oxide and layereddouble hydroxide in the application of energy storage	SDG 7: Affordable and Clean Energy
34	BTECH/10247/21	Saurav Sinha	Dr. Aniruddha Deb	Detection of UTI using ML	SDG 3: Good Health and Well-being
35	Btech/10629/21	Vivek Kumar Bauri	Dr. Aniruddha Deb	Evaluation of machine learning models in Liver DiseasePredictio n	SDG 3: Good Health and Well-being
36	BTECH/10752/21	Tejaswini Kumari	Dr. Aniruddha Deb	ASYMMETRIC WAVE-DRIVEN DYNAMICS OF DNA FORFASTER SEGREGATIO N THROUGH NANOPOROUS HYDROGELS	SDG 9: Industry, Innovation and Infrastructure
37	BTECH/10768/21	Apurva Jha			SDG 9: Industry, Innovation and Infrastructure
38	BTECH/10794/21	Archita karmakar			SDG 9: Industry, Innovation and Infrastructure
39	BTECH/10645/21	Aditya Kumar	Dr. SudiptaGoswami	Study of mechanical properties of Epoxidized novolac andNatural Rubber blend compound	SDG 9: Industry, Innovation and Infrastructure
40	BTECH/10726/21	ASHISH RANJAN			SDG 9: Industry, Innovation and Infrastructure

41	BTECH/10704/21	Mohit Kumar	Dr. SudiptaGoswami	Preparation and characterization of Epoxy/epoxidized novolacblend based nanocomposite	SDG 9: Industry, Innovation and Infrastructure
42	BTECH/10706/21	Annocent Marandi			SDG 9: Industry, Innovation and Infrastructure
43	Btech/10032/21	Aastha Sharma	Truuchem Technologies Pvt Ltd	Supply Chain Analyst Intern: Raw Material Procurement for R&Dand contract development chemical manufacturing	SDG 9: Industry, Innovation and Infrastructure
44	Btech/10336/21	Vislavath Praharsha	IIT Kharagpur	Sustainable solutions-revolutionizing waste management	SDG 3: Good Health and Well-being, SDG 9: Industry, Innovation and Infrastructure, Production
45	BTECH/10348/21	Roushan Kumar Barnwal	1 Vendor Platform	Implementation of AWS services	SDG 9: Industry, Innovation and Infrastructure
46	BTECH/10778/21	Rahul Kumar Suman	1vendor platform	How business model works	SDG 9: Industry, Innovation and Infrastructure
47	btech/10482/21	Ritesh Kumar Mishra	1vendor platform	Supply chain/operation management	SDG 9: Industry, Innovation and Infrastructure
49	BTECH/10803/21	Kushagra Vareesh Jha	Acmegrade	Business Development Associate	SDG 9: Industry, Innovation and Infrastructure
53	BTECH/10463/21	Srishti Singh	AdFolds	Driving Sales through Strategic Customer Outreach	SDG 9: Industry, Innovation and Infrastructure
55	BTECH/10772/21	Tushar Aryan	Atomgrid (TruuchemTechnologies Pvt Ltd)	Custom Development & Manufacturing (CDMO) of SpecialtyChemicals	SDG 9: Industry, Innovation and Infrastructure
56	BTECH/10343/21	Khushi	Bain Capability Network	Winter Analyst Intern at Bain Capability Network(People & OrgCentre of Excellence)	SDG 9: Industry, Innovation and Infrastructure
57	BTECH/10777/21	Sarthak Sanidhya	BIT Patna	Physicochemical analysis of Surface Water and its suitability withVarious Purposes	SDG 9: Industry, Innovation and Infrastructure
58	BTECH/10248/21	Kumar Ashish	BOON:SWAJAL WATERPRIVATE LIMITED	Lead Generation and Customer acquisition	SDG 9: Industry, Innovation and Infrastructure

59	BTECH/10338/21	Gunjan Kumari	Boon:Swajal Water PrivateLimited	Engineering of the Neo purifier	SDG 9: Industry, Innovation and Infrastructure
60	BTECH/10776/21	RAJKIRAN SURYAVANSHI	CITYMALL	Supply chain optimization	SDG 9: Industry, Innovation and Infrastructure
61	BTECH/10255/21	Soren Mrinalini	CSIR-Central Ceramic & GlassResearch, Kolkata	Preparation of Alumina fibers for high temperature applications	SDG 9: Industry, Innovation and Infrastructure
63	BTECH/10034/21	Lily	Flipkart	Increasing productivity and PV accuracy	
64	BTECH/10723/21	Prashansa Agarwal	Flipkart	Reduction of Panel Repair TAT & Increase Local PurchaseAdherence	SDG 9: Industry, Innovation and Infrastructure
65	BTECH/10337/21	BHARADWAJ V PILLAI	IIT Hyderabad	Storage Stability Tests on Aviation Fuels	SDG 7: Affordable and Clean Energy
66	BTECH/10252/21	YUKTA NIDHI	Indobell Industries Ltd. Kolkata	Fibre Reinforced silica Aerogel Blanket Preparation	SDG 9: Industry, Innovation and Infrastructure
67	BTECH/10334/21	Mohit Soni	IPCA Centre for Waste Management and Research,TERI School of AdvancedStudies, New Delhi	Closing the loop: strategies for sustainable collection and reuseof rigid packaging materials in oil industries	SDG 9: Industry, Innovation and Infrastructure
70	Btech/10342/21	Jyoti Prabha	Lab mentix	Data analyst	SDG 9: Industry, Innovation and Infrastructure
71	BTECH/10702/21	Saloni Singh	Leadsquared	Customer Research - Intern (Strategy)	SDG 9: Industry, Innovation and Infrastructure
72	BTECH/10036/21	Ayush Kumar	Maruti Suzuki India Limited	Effect of ethanol mixed fuel on fuel Circuit components	SDG 7: Affordable and Clean Energy
73	BTECH/10488/21	Gautam Kumar Mishra	Matix Fertilisers and Chemicals	Industrial Exposure and Optimization of Steam MethaneReforming in Ammonia Plant	SDG 7: Affordable and Clean Energy
75	BTECH/10250/21	Aayush Bardhan	PORTER	Partner performance monitoring Pan india	SDG 9: Industry, Innovation and Infrastructure
76	BTECH/10254/21	Meghna Singh	Porter	Enhancing Courier Operations: Insights &	SDG 9: Industry, Innovation and Infrastructure

				Optimization at Porter	
77	BTECH/10465/21	Soumya Parihar	Porter	8ft Market Research	SDG 9: Industry, Innovation and Infrastructure
78	BTECH/10705/21	Ankit Kashyap	Radiant Infonet Private Limited	E -Procurement Web	SDG 9: Industry, Innovation and Infrastructure
79	BTECH/10333/21	Kunal Dalal	SHOWTIME Consulting	Integration of Artificial Intelligence in predicting elections	SDG 9: Industry, Innovation and Infrastructure
83	BTECH/10483/21	Siddharth Singh	Slnko Energy Pvt. Ltd.	Protrac	SDG 9: Industry, Innovation and Infrastructure
84	BTECH/10257/21	Shayan Hamza	SLnKO energy pvt.ltd.	Supply Chain Management	SDG 9: Industry, Innovation and Infrastructure
86	BTECH/10769/21	Shem Vishal	Tata Steel	Development and Characterization of New Advanced FunctionalCoatings for galvanized steel	SDG 9: Industry, Innovation and Infrastructure
87	BTECH/10672/21	Shivam Singh	TATA Steel	Availability Improvements of Heat Exchangers	SDG 9: Industry, Innovation and Infrastructure
88	BTECH/10648/21	GADULA DEVAKUMAR	TEACHNOOK	BUSINESS DEVELOPMENT	SDG 9: Industry, Innovation and Infrastructure
90	BTECH/10632/21	Deepak Kumar Yadav	Truuchem Technologies(Atomgrid)	Business Development and supply chain intern	SDG 9: Industry, Innovation and Infrastructure
91	BTech/10339/21	Amey Shukla	Truuchem Technologies(Atomgrid)	Contract Development Manufacturing Operations and Specialty(CDMO) Chemicals for Europe market	SDG 9: Industry, Innovation and Infrastructure
92	BTECH/10383/21	Akhilanand Singh	Truuchem Technologies Pvt.Ltd.	Optimising supply chain operations, freight charges, and logisticsto improve efficiency while ensuring product compliance.Analysing Certificate Of Analysis lab test results (FTIR, TGA,DSC, Saponification Value) to	SDG 9: Industry, Innovation and Infrastructure

				enhance product quality andregulatory adherence.	
93	BTECH/10733/21	Dev kumar	TSS ADVERTISING	APAC expansion project	SDG 9: Industry, Innovation and Infrastructure
94	BTECH/10649/21	Rupam Tirkey	TSS ADVERTISING	Business Development	SDG 9: Industry, Innovation and Infrastructure
95	BTECH/10631/21	Rishabh Raj	Urban Company	Category operations Management	SDG 9: Industry, Innovation and Infrastructure
96	BTECH/10464/21	Sushant Kumar Jha	Urban Company	Increasing Share of Spa Luxe among whole Spa Supercat	SDG 9: Industry, Innovation and Infrastructure
98	BTECH/10351/21	Srishti Choudhary	ZS associates	TREMFYA LAUNCH MILE/MOMENT STUDY	SDG 9: Industry, Innovation and Infrastructure
99	BTECH/10251/21	Shreyash Dilip Zade	ZS Associates India Pvt. Ltd.	Thrombosis	SDG 9: Industry, Innovation and Infrastructure
100	BTECH/10259/21	Mugdha Shukla	Flipkart	Resolution of Orphan Shipments and BRSNR	SDG 9: Industry, Innovation and Infrastructure

3.7 Attainment of Course Outcomes (25)

3.7.1. Describe the Assessment Tools and Processes Used to Gather the Data for the Evaluation of Course Outcome (5)

(Describe different assessment tools (semester end examinations, mid-semester tests, laboratory examinations, student portfolios etc.,) to measure the student learning and hence attainment of course outcomes.)

I. EXAMINATIONS FOR THE UNDER-GRADUATE (UG) PROGRAMME

1. **THEORY COURSES**: The total of 100 marks are distributed as under:

   a) **Semester End Examination [50%]**
   The Question Paper will have 05 questions with one question from each of the five modules of the syllabus, and there will be no choice. All 05 questions need to be answered to ensure compliance of course outcome as required by graduate attributes.

   b) **Continuous Internal Assessment [50%]**
   The Continuous Internal Assessment shall consist of:

   i) Mid-Semester Examination [25%]
   Mid-semester examination will be conducted by the Examination Section of the Institute. The Question Paper shall not carry any choice. There shall be five (05) questions, each carrying 5 marks (*5×5= 25 marks*).

   ii) Two Quizzes [20% *(2 X 10%)***]**
   There shall be two quizzes of 10 marks each. First Quiz will be held before the mid-semester examination and the Second Quiz before the Semester-End examination. The two quizzes will be conducted by the department offering that course.

   iii) Teacher's Assessment [5%]
   This assessment shall be decided by the teacher(s) conducting that course. This may consist of assignment(s) / attendance / performance / participation in class/ viva. However, the chosen assessment tool shall be announced in the class by the teacher(s) before its commencement and shall be the same for all sections of that course and for the same course at all Centres where this course is being offered.

Common courses taught for multiple sections of the same paper, Quiz (es) across all sections shall be uniform i.e., same Question Paper to be used for the quizzes and the quizzes to be conducted on the same day and at the same time. For common papers, the department shall take the service of one common coordinator who shall be responsible for setting up the Question Paper in consultation with the course teacher(s). Coordinators shall be appointed by the respective Head of the Department/Directors of the Centres as the case may be. If a course is taught by more than one teacher, there shall be one common coordinator for the course.

2. **LABORATORY COURSES: [100 Marks** (*Distributed as under*)**]**:

a) **Continuous Internal Assessment** **[60%** *(Distribution is as follows)***]**

i)	Day-to-day performance and Lab files	[30%]
ii)	Quiz(es)	[10%]
iii)	Viva	[20%]
	Subtotal of 2.(a)	**[60%]**



b) **Semester-End Examination** **[40%** *(Distribution is as follows)***]**

i)	Examination Experiment Performance	[30%]
ii)	Quiz	[10%]
	Subtotal of 2.(b)	**[40%]**
	Grand Total 2.(a)+(b)	**[100%]**

3. **UG PROJECT: The total of 100 marks are distributed as under:**

Project work may be carried out preferably independently or by a group of students not exceeding four (4). More than four students in a group shall be discouraged. Students opting for an Industry Internship in lieu of project work shall do it preferably independently or as deemed by the concerned industry. Project work done outside Institution shall be from Institutions with current Engineering/Science/Management/ University NIRF ranking within 100. In the case of Pharmacy/Architecture students, the same shall be from Institutions with current Pharmacy/Architecture NIRF ranking within 50. In any case, there shall be an academic guide from the parent Institution. Students doing industry internships or research projects in an outside Organization/Institute/University shall produce an internship/project completion certificate from the concerned Organisation/Institute/University to the Head of the Department before the final examination.

Project evaluation shall be as follows:

a) External Examiner	[50%]
b) Project Guide	[25%]
c) Departmental Project Evaluation Committee (DPEC)	[25%]
TOTAL	**[100%]**

The Departmental Project Evaluation Committee (DPEC) shall be constituted by the Head of the Department with inputs from and approval of Dean (UGS). The Guide of the candidate shall not participate in the evaluation process by the DPEC. The panel of external examiners to be provided by the Head of the Department shall be from Institutions with current Engineering/Science/ Management/University NIRF ranking within 100.

For Pharmacy and Architecture projects, the panel of external examiners to be provided by the Head of the Department shall be from Institutions with current Pharmacy/Architecture NIRF ranking within 50.

A plagiarism check is mandatory for the evaluation of all the Dissertations.

4. **Guidelines for Summer Training of the Students of UG Sixth Semester**

The Undergraduate students of Sixth Semester under CBCS Course will have to undergo a Summer Training Programme in a reputed Organization, which shall be a part of the Course Curriculum for the award of degree.

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Further, the student will have to prepare a Report, duly certified by the Summer Training Organization soon after the completion of the Summer Training. The Head of the Department shall constitute an Evaluation Committee to conduct the Viva-Voce of these students. The Viva-Voce examination shall be conducted after the completion of Summer Training.

The break-up of marks shall be as under:

a) Progressive evaluation (50%) : Based on Summer Training Report

b) End-semester Evaluation (50%) : Based on Viva-Voce conducted in the Department by a Committee.

3.7.2 Record the Attainment of Course Outcomes of all Courses with Respect to Set Attainment Levels (20)

(Program shall set course outcome attainment levels for each course. Measuring CO attainment through Continuous Internal Examinations (CIE) and Semester End Examination (SEE) needs to be detailed. Target may be stated in terms of percentage of students getting more than class average marks or set by the program in each of the associated COs in the assessment instruments (midterm tests, assignments, mini projects, reports and presentations etc. as mapped with the COs.))

Steps for Calculating CO, PO/PSO and PEO Attainment

1. Map the Questions to respective COs. Note that one question can map to multiple COs with different weights.
   For eg. Q1 (a) → CO1 (60%), CO2 (40%) → Different weightage
   Q1 (b) →CO1 (50%), CO2 (50%) → Equal weightage
   Map for all forms of assessments.
2. For each student, calculate the following:
   a. For each assessment type, compute the weighted sum of marks obtained in questions mapped to the respective COs and the Total marks those questions carry.
   For eg. For Mid Semester Exam

$$Marks_{CO_x} = \sum_{i=1}^{n} M_i * W_i$$

$$Total_{CO_x} = \sum_{i=1}^{n} FM_i * W_i$$

x is the number of COs. $x = 1, 2, 3, 4, 5, \ldots$
M_i is the marks obtained and FM_i is the full mark for the i^{th} question mapped to CO_x and n is the total number of questions/assessments.
W_i is the weightage of the question i for CO_x. It can be any % value in the range [0, 100]

Questions mapping to CO's											
Assessments (FM)	**Questions**	**Mapped CO's**									
Quiz 1 (10)	Q1, Q2	CO1, CO2									
Quiz 2 (10)	Q1, Q2	CO3, CO4									
Assignment (5)	Q1	CO4, CO5									
Mid Sem (25)	Q1, Q2, Q3, Q4, Q5	1(a)	1(b)	2(a)	2(b)	3(a)	3(b)	4(a)	4(b)	5(a)	5(b)
		CO1	CO1	CO1	CO1	CO2	CO2	CO2	CO2	CO3	CO3
End Sem (50)	Q1, Q2, Q3, Q4, Q5	1(a)	1(b)	2(a)	2(b)	3(a)	3(b)	4(a)	4(b)	5(a)	5(b)
		CO1	CO1	CO2	CO2	CO3	CO3	CO4	CO4	CO5	CO5

Quiz 1 mapped to CO1 (50%) & CO2 (50%)

$Total_{CO_1} = \sum_{i=1}^{3} FM_i * W_i$
$= 10 * \frac{50}{100}$
$= 5$

$Marks_{CO_1} = \sum_{i=1}^{3} M_i * W_i$
$= 5 * \frac{50}{100}$
$= 2.5$

	Internal (25%)					CO1	
	Quiz1(10)		Quiz2(10)		Assignment (5)	$Total_{CO_1}$	$Marks_{CO_1}$
Full Marks	**5**	**5**	**5**	**5**	**5**		
Student 1	3	2	2	4	4	5	2.5
Student 2	2	5	5	3	5	5	3.5
Student 3	1	4	4	2	4	5	2.5
Student 4	4	4	4	4	5	5	4
Student 5	3	5	5	4	5	5	4
Student 6	2	2	2	3	5	5	2
Student 7	5	4	3	5	5	5	4.5
Student 8	3	5	4	2	5	5	4
Student 9	3	0	1	3	4	5	1.5
Student 10	1	4	4	3	5	5	2.5

b. For each assessment type, apply the weightage of the assessment and again calculate the marks obtained for each CO and the Total marks (This step is required only when the total marks of all assessments is not in the ratio prescribe by BIT i.e Internal-25%, Mid Sem-25% and End Sem-50%).

$$Weighted_Total_{CO_x} = Total_{CO_x} * AW\%$$

$$Weighted_Marks_{CO_x} = \frac{Marks_{CO_x}}{Total_{CO_x}} * Weighted_Total_{CO_x}$$

Where AW is the weightage, the assessment carries.

$Weighted_Total_{CO_1} = Total_{CO_1} * AW\%$
$= 5 * \frac{25}{100}$
$= 1.25$

$Weighted_Marks_{CO_1} = \frac{Marks_{CO_1}}{Total_{CO_1}} * Weighted_Total_{CO_1}$
$= \frac{2.5}{5} * 1.25$
$= 0.63$

	Internal (25%)					CO1		CO1	
	Quiz1 (10)		Quiz2 (10)		Assignment (5)	$Total_{CO_1}$	$Marks_{CO_1}$	$Weighted_Total_{CO_1}$	$Weighted_Marks_{CO_1}$
Full Marks	**5**	**5**	**5**	**5**	**5**				
Student 1	3	2	2	4	4	5	2.5	1.25	0.63
Student 2	2	5	5	3	5	5	3.5	1.25	0.88
Student 3	1	4	4	2	4	5	2.5	1.25	0.63
Student 4	4	4	4	4	5	5	4	1.25	1.00
Student 5	3	5	5	4	5	5	4	1.25	1.00
Student 6	2	2	2	3	5	5	2	1.25	0.50
Student 7	5	4	3	5	5	5	4.5	1.25	1.13
Student 8	3	5	4	2	5	5	4	1.25	1.00
Student 9	3	0	1	3	4	5	1.5	1.25	0.38
Student 10	1	4	4	3	5	5	2.5	1.25	0.63

c. For each assessment type, calculate Attainment_Percentage, Attainment_Score and Attainment_Level based on the predefined rubrics, for each CO.

S. No	Evaluator	Score	Grading Scale Min % Range	Grading Scale Max % Range
1	High	3	65	100
2	Medium	2	45	64.99
3	Low	1	0	44.99

$$\text{Attainment_Percentage}_{CO_x} = \frac{Weighted_Marks_{CO_x}}{Weighted_Total_{CO_x}} * 100$$

$$\text{Attainment_Score}_{CO_x} = \begin{cases} 1, if\ 44.9 > Attainment_Percentage > 0 \\ 2, if\ 45 > Attainment_Percentage > 64.99 \\ 3, if\ 65 > Attainment_Percentage > 100 \end{cases}$$

$$\text{Attainment_Level}_{CO_x} = \begin{cases} LOW, if\ Attainment_Score = 1 \\ MEDIUM, if\ \ if\ Attainment_Score = 2 \\ HIGH, if\ \ if\ Attainment_Score = 3 \end{cases}$$

$$\text{Attainment_Percentage}_{CO_1} = \frac{Weighte_Marks_{CO_1}}{Weighted_Total_{CO_1}} * 100 = \frac{0.63}{1.25} * 100$$

$$\text{Attainment_Score/Level}_{CO_1} = \begin{cases} 1/LOW, if\ 44.9 > Attainment_Percentage > 0 \\ \mathbf{2/MEDIUM, if\ 45 > Attainment_Percentage > 64.99} \\ 3/HIGH, if\ 65 > Attainment_Percentage > 100 \end{cases}$$

	CO1		
	Internal		
	Attainment_ Percentage	Attainment_ Score	Attainment_ Level
Student 1	50	2	MEDIUM
Student 2	70	3	HIGH
Student 3	50	2	MEDIUM
Student 4	80	3	HIGH
Student 5	80	3	HIGH
Student 6	40	1	LOW
Student 7	90	3	HIGH
Student 8	80	3	HIGH
Student 9	30	1	LOW
Student 10	50	2	MEDIUM

Calculate this for all the other assessments like Mid Sem and End Sem, before proceeding to the next Step

3. Calculate the Direct_Assessment_Percentage and Direct_Assessment_Score over the total number of students in the course, over all the assessment types. Check if the target is achieved or not.

$$\text{Direct_Assessment_Percentage}_{CO_x} = \sum_{i=1}^{M} \sum_{j=1}^{N} \frac{Assessment_Percentage_{CO_x}}{N}$$

$$\text{Direct_Assessment_Score}_{CO_x} = \sum_{i=1}^{M} \sum_{j=1}^{N} \frac{Assessment_Score_{CO_x}}{N}$$

Where N is the total number of students enrolled in the course and M are the total types of assessments.

AVERAGE

AVERAGE

	Internal		Mid Sem		End Sem		Direct_Assessment_Percentage$_{CO}$ over, all assessments	Direct_Assessment_Score$_{CO}$ over, all assessments
	AVG. PERC.	AVG. SCORE	AVG. PERC.	AVG. SCORE	AVG. PERC.	AVG. SCORE		
Student 1	50	2	50	2	60	2	**53.33**	2.00
Student 2	70	3	60	2	70	3	66.67	2.67
Student 3	50	2	100	3	50	2	66.67	2.33
Student 4	80	3	100	3	80	3	86.67	3.00
Student 5	80	3	80	3	50	2	70.00	2.67
Student 6	40	1	80	3	90	3	70.00	2.33
Student 7	90	3	70	3	70	3	76.67	3.00
Student 8	80	3	60	2	50	2	63.33	2.33
Student 9	30	1	80	3	60	2	56.67	2.00
Student 10	50	2	50	2	90	3	63.33	2.33
							= 67.33%	**= 2.47**

AVERAGE Over, all students

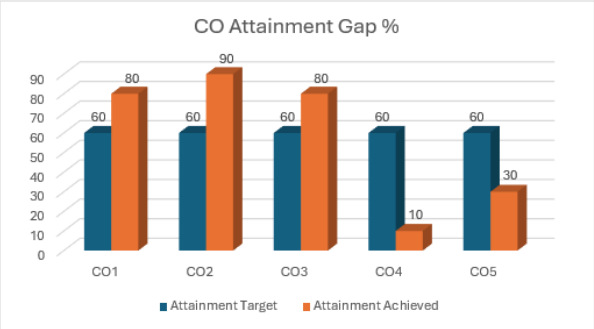
AVERAGE Over, all students

Calculate this for all the other COs, before proceeding to the next Step

4. Direct_Assessment_Percentage$_{CO_x}$ and Direct_Assessment_Score$_{CO_x}$ for all the CO's are tabulated, and an average value is computed (highlighted in Red)

		CO1	CO2	CO3	CO4	CO5	Average
Average Attainment % over all students	**Direct_Assessment_Percentage$_{CO_x}$**	**67.33**	**79.53**	**94.33**	**53.67**	**59.00**	**70.77**
Average Attainment level over all students	**Direct_Assessment_Score$_{CO_x}$**	**2.47**	**2.30**	**2.23**	**1.93**	**1.97**	**2.18**

5. The Direct Attainment of CO's are matched with the pre-defined Targets, to check if the CO's have been attained or not.
TARGET :- The same target value is set for all the COs of a course.
TARGET SET:- 60% STUDENTS MUST ACHIEVE 60% AND ABOVE



	No. of Students with **Direct_Assessment_Percentage** >60%	% of Students achieving the Target	Attainment Target	Target Achieved?	CO Attainment Gap %	Actions Proposed to Fill the Gap	Modification of CO target (if required)
CO1	8	$\frac{8}{10} * 100$ =80%	60%	Yes	+20		
CO2	9	90%	60%	Yes	+30		
CO3	8	80%	60%	Yes	+20		
CO4	1	10%	60%	No	-50		
CO5	3	30%	60%	No	-30		

- If targets are achieved, we may set higher targets subsequently as part of continuous improvement.
- If targets are not achieved then instead of lowering the target, an action plan should be put into place to attain the target in subsequent years.

6. Calculate the indirect assessment score. For this, take the Course Exit feedback from students on all the CO's and compute the average feedback score. The score for each question will be in 0,1,2 or 3 grade.

	CO1	CO2	CO3	CO4	CO5
Student 1	3	3	3	2	1
Student 2	2	3	2	3	3
Student 3	3	2	3	3	2
Student 4	2	3	2	3	2
Student 5	3	3	3	1	2
Student 6	3	3	2	3	3
Student 7	3	3	3	3	3
Student 8	2	2	2	2	2
Student 9	3	3	3	2	1
Student 10	3	3	2	3	1
Indirect_Assessment_$Score_{CO_x}$	**2.7**	**2.8**	**2.5**	**2.5**	**2**

AVERAGE Over, all students

7. Calculate the final CO attainment for the course by taking 70% of Direct Assessment and 30% of the Indirect Assessment

$$Attainment_Score_{CO_x} = 70\%\ \text{Direct_Assessment}_Score_{CO_x} + 30\%\ \text{Indirect_Assessment}_Score_{CO_x}$$

	CO1	CO2	CO3	CO4	CO5	Average
Direct_Assessment_$Score_{CO_x}$- A	2.47	2.30	2.23	1.93	1.97	**2.18**
Indirect_Assessment_$Score_{CO_x}$- B	2.70	2.80	2.50	2.50	2.00	**2.5**
***Attainment_Score*$_{CO_x}$=70%*A+30%*B**	**2.54**	**2.45**	**2.31**	**2.10**	**1.98**	**2.01**

Utilized later for PO/PSO attainment

8. Calculate the Direct PO/PSO assessment for all courses in a program, by using the CO-PO/PSO articulation matrix, comprising the level of mapping of a certain CO to a particular PO/PSO. Note, the level of mapping, represented as $Level_{CO-PO_{x,y}}$/$Level_{CO-PSO_{x,y}}$ in the equation below can be 0, 1, 2 or 3, representing No, Low, Medium and High respectively.
   - Compute the Average of Direct_Assessment_$Score_{CO_x}$ for all CO's, representing the overall Direct_Assessment_Score of the course. Similarly, compute the Average of $Level_{CO-PO}$/$Level_{CO-PSO}$ for all PO's/PSO's.
   - Populate a table, comprising of Direct_Assessment_$Score_{CO_x}$ for each course in the program and their corresponding average $Level_{CO-PO}$/$Level_{CO-PSO}$

$$Direct_Assessment_Score_{PO_y} = \frac{\sum_{x=1}^{5} \text{Direct_Assessment}_Score_{CO_x} * \sum_{x=1}^{5} Level_{CO-PO_{x,y}}}{3}$$

$$Direct_Assessment_Score_{PSO_y} = \frac{\sum_{x=1}^{5} \text{Direct_Assessment}_Score_{CO_x} * \sum_{x=1}^{5} Level_{CO-PSO_{x,y}}}{3}$$

where y is the number of POs and PSOs.

The Table shows the Course Outcomes of K21 Batch

SL. NO.	Course Code	Course Name	CO1	CO2	CO3	CO4	CO5
1	MT 131	UHV2	2.58	2.55	2.78	2.59	2.38
2	CL 201	Thermodynamics	2.02	2.11	2.26	2.02	2.01
3	CL 203	Fluid Mechanics	2.23	2.29	2.26	2.52	2.09
4	CL 217	Chemical Process Calculations	2.04	2.13	2.39	2.06	2.38
5	CL 219	Heat Transfer Operation	2.28	2.38	2.30	1.92	2.24
6	CL 205	Mechanical Operation	2.46	2.44	2.42	1.85	2.00
7	CL 215	Mass Transfer Operation-I	1.94	2.46	2.17	2.57	2.65
8	CL 223	Chemical Reaction Engineering -I	2.23	2.09	2.15	2.42	2.17
9	CL 227	Material Science & Engineering	2.30	2.48	2.14	2.33	2.61
10	CL 229	Macromolecular Science	1.77	1.73	1.65	1.923	2.04
11	CL 233	Waste Management	2.94	2.80	2.89	2.93	2.91
12	CL 235	Safety and Hazards in Process Industries	2.84	2.79	2.40	2.54	2.60
13	CL 216	Chemical Engineering Lab -I	2.21	2.20	2.21	2.20	2.20
14	CL 301	Mass Transfer Operation – II	2.06	2.51	2.43	2.29	2.4
15	CL 325	Chemical Reaction Engineering-II	1.96	2.22	2.16	2.11	2.15
16	CL 327	Project Engineering and Economics	2.31	2.26	2.1	2.34	2.22
17	CL 337	Chemical Process Technology	2.34	2.61	2.65	2.46	2.51
18	CL 321	Petroleum Refinery Engineering	2.39	2.39	2.33	2.37	2.18
19	CL 341	Polymer Technology	2.14	2.12	2.47	2.37	2.48
20	CL 233	Waste Management	2.94	2.8	2.89	2.93	2.91
21	CL304	Computer Aided Process Engineering Lab.	2.6	2.6	2.56	2.56	2.58
22	CL336	Chemical Engineering Lab -II	2.46	2.46	2.46	2.45	2.42
23	CL329	Transport Phenomena	2.16	2.23	2.37	2.07	2.28
24	CL 333	Process Control & Instrumentation	2.21	2.33	2.71	2.51	2.45
25	CL 349	Polymer Processing	2.52	2.63	2.27	2.51	2.4
26	CL 355	Petrochemicals Technology	1.97	2.06	2.04	1.85	2.45
27	CL 357	Nanotechnology	2.42	2.47	1.98	2.47	2.76
28	CL 371	Computational Fluid Dynamics	2.23	2.05	2.66	2.8	2.76
29	CL 373	Environment & Plastics	2.76	2.43	2.4	2.63	2.79
30	MC300	Summer Training - Mandatory	2.84	2.88	2.73	2.81	1.86
31	CL 310	Design Lab	2.78	2.05	2.41	2.43	2.71
32	CL 332	Chemical Engineering Lab – III	2.22	2.21	2.21	2.21	2.2

3.8 Attainment of Program Outcomes and Program Specific Outcomes (25)

(The attainment of POs and PSOs by direct assessment based on student performance and indirect assessment based on surveys are to be presented through program level Course-PO & PSO matrices as indicated.)

Course	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12
CL201	2.03	2.05	2.06	2.06	2.06	2.02	2.03	0	2.08	2.06	0	2.06
CL203	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28
CL217	2.20	2.20	2.19	2.26	2.17	2.25	2.27	2.27	2.23	2.25	2.27	2.20
CL219	2.22	2.22	2.22	2.20	2.22	2.22	2.22	2.22	2.22	2.20	2.22	2.22

CL205	2.24	2.24	2.24	2.24	2.24	2.26	2.26	2.24	2.24	2.24	2.24	2.24
CL215	2.36	2.36	2.46	2.37	2.36	2.46	2.46	2.46	2.40	2.42	2.52	2.36
CL223	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21
CL227	2.37	2.37	2.37	2.40	2.38	2.37	2.37	2.37	2.37	2.37	0	2.37
CL229	1.82	1.82	1.82	1.82	1.82	1.80	1.80	1.82	1.82	1.82	1.82	1.82
CL233	2.89	2.90	2.91	2.89	2.89	2.93	2.91	1	2.89	2.89	0	2.89
CL235	2.64	2.66	2.68	2.66	2.66	2.69	2.68	1	2.64	2.66	0	2.67
CL212	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20
CL301	2.33	2.31	2.17	2.42	2.25	2.39	2.33	2.29	2.17	2.44	2.42	2.29
CL325	2.12	2.10	2.07	2.11	2.12	2.06	2.09	0	2.12	2.11	0	2.11
CL327	2.25	2.27	2.27	2.26	2.27	2.28	2.28	0	2.25	2.26	0	2.27
CL337	2.45	2.50	2.40	2.60	2.50	2.55	2.50	2.48	2.40	2.59	2.60	2.50
CL321	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33
CL341	2.78	2.31	2.28	2.29	2.32	2.32	2.36	2.32	2.26	2.34	2.32	2.32
CL304	2.59	2.29	1.88	1.71	1.87	2.06	2.06	2.20	1.88	2.38	2.06	2.06
CL336	2.45	2.31	2.09	2.01	2.09	2.19	2.26	2.18	2.09	2.35	2.18	2.18
CL329	2.22	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
CL333	2.44	2.44	2.46	2.43	2.48	2.43	2.44	2.43	2.45	2.43	0	2.43
CL349	2.44	1.80	1.92	2.05	2.05	1.99	1.96	2.17	1.62	1.81	2.14	2.06
CL355	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07
CL357	2.25	2.36	2.50	2.24	2.20	2.45	2.47	2.52	2.53	2.40	2.24	2.41
CL371	2.50	2.51	2.47	2.48	2.50	2.56	2.52	0	2.50	2.48	0	2.48
CL373	2.59	2.60	2.58	2.60	2.60	2.58	2.56	2.63	2.60	2.60	2.62	2.60
CL310	2.35	2.36	2.44	2.53	2.51	2.47	2.46	2.47	2.44	2.43	2.47	2.47
CL332	2.21	1.97	1.61	1.47	1.61	1.77	1.89	1.77	1.61	2.04	1.77	1.77
MC300	2.64	2.55	2.40	1.96	2.14	2.85	0	2.09	2.49	1.95	1.65	2.16

PO Attainment Indirect

Course	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
Exit Feedbac	2.43	2.45	2.43	2.46	2.41	2.50	2.50	2.45	2.45	2.44	2.40	2.45
Employers ' Fe	2.33	2.60	2.33	2.62	2.56	2.17	2.17	2.67	2.71	2.70	2.33	2.56
Parents' Feed	2.75	2.80	2.71	2.75	2.75	2.90	2.83	2.94	2.90	2.80	2.69	2.75

Note: The Institution can fix the weightage of the indirect attainment maximum up to 20%.

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Direct Attainment	2.37	2.29	2.24	2.24	2.26	2.29	2.30	2.25	2.27	2.31	2.23	2.28
In Direct Attainment	2.50	2.62	2.49	2.61	2.57	2.52	2.50	2.69	2.69	2.65	2.47	2.59
Overall Attainment	2.40	2.36	2.29	2.31	2.32	2.34	2.34	2.34	2.35	2.38	2.28	2.34

PSO Attainment:

Course	PSO1	PSO2	PSO3
CL201	2.08	2.08	2.08
CL203	2.28	2.28	2.28
CL217	2.20	2.27	2.20
CL219	2.22	2.22	2.22
CL205	2.24	2.24	2.24
CL215	2.36	2.50	2.36
CL223	2.21	2.21	2.21
CL227	2.37	2.37	2.37
CL229	1.82	1.82	1.82
CL233	2.89	2.89	2.89
CL235	2.64	2.64	2.64
CL212	2.20	2.20	2.20
CL301	2.34	2.36	2.34
CL325	2.12	2.12	2.12
CL327	2.25	2.25	2.25
CL337	2.50	2.55	2.51
CL321	2.33	2.33	2.33
CL341	2.32	2.32	2.32
CL233	2.89	2.89	2.89
CL304	2.06	2.06	2.06
CL336	2.18	2.18	2.18
CL329	2.00	2.00	2.00
CL333	2.44	2.48	2.45
CL349	1.87	2.06	2.05
CL355	2.07	2.07	2.07
CL357	2.42	2.31	2.42
CL371	2.50	2.50	2.50
CL373	2.56	2.60	2.56
CL310	2.47	2.47	2.47
CL332	1.77	1.77	1.77
MC300	2.12	2.40	2.38
CL407	2.59	2.59	2.59
CL433	2.58	2.62	2.58
CL437	2.25	2.25	2.25
CL421	2.11	2.15	2.11
CL441	2.22	2.22	2.22
CL429	1.91	2.04	1.0

CL400M	2.15	2.15	2.15
CL406	2.16	2.16	1.0
CL408	2.57	2.57	2.57

PSO Attainment Indirect

Survey	**PSO1**	**PSO2**	**PSO3**
Exit Feedback	2.39	2.35	2.38
Employers' Feedback	2.52	2.58	2.57
Parents' Feedback	2.81	2.77	2.79

PSO Attainment Level

Course	**PSO1**	**PSO2**	**PSO3**
Direct Attainment	2.28	2.30	2.31
InDirect Attainment	2.57	2.57	2.58
Overall Attainment	2.34	2.35	2.36

Criterion 4: Students' Performance (120)

Table No. 4A: Admission details for the program excluding those admitted through multiple entry and exit points.

Item (Information is to be provided cumulatively for all the shifts with explicit headings, wherever applicable)	CAY (2025-26)	CAYm1 (2024-25)	CAYm2 (2023-24)	CAYm3 (2022-23)	CAYm4 (LYG) (2021-22)	CAYm5 (LYGm1) (2020-21)	CAYm6 (LYGm2) (2019-20)	CAYm7 (LYGm3) (2018-19)
N= Sanctioned intake of the program (as per AICTE /Competent authority)	120	120	120	120	120	60	60	60
N1= Total no. of students admitted in the 1st year minus the no. of students, who migrated to other programs/ institutions plus no. of students, who migrated to this program	**131**	132-18 **114**	117-34 **83**	132-9 **123**	121-15 **106**	57-12 **45**	49-7 **42**	51-6 **45**
N2= Number of students admitted in 2nd year in the same batch via lateral entry including leftover seats	0	0	0	0	0	0	0	0
N3= Separate division if any	0	0	0	0	0	0	0	0
N4= Total no. of students admitted in the 1st year via all Supernumerary quotas	0	0	0	0	0	0	0	0
Total number of students admitted in the program (N1 + N2 + N3 + N4) - excluding those admitted through multiple entry and exit points.	**131**	**114**	**83**	**123**	**106**	**45**	**42**	**45**

Table No. 4B: Admission details for the program through multiple entry and exit points.

Item (No. of students admitted/exited through multiple entry and exit points) in the respective batch		**CAY**	**CAYm1**	**CAY*m*2**	**CAY*m*3**	**CAYm4 (LYG)**	**CAYm5 (LYGm1)**	**CAYm6 (LYGm2)**	**CAYm7 (LYGm3)**
N5(Multiple entry) N5=N52+N53+N54	N52= No. of students admitted in 2nd year via multiple entry and exit points in same batch	0	0	0	0	0	0	0	0
	N53= No. of students admitted in 3rd year via multiple entry and exit points in same batch	0	0	0	0	0	0	0	0
	N54= No. of students admitted in 4th year via multiple entry and exit points in same batch	0	0	0	0	0	0	0	0
	N5=N52+N53+N54	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

N6 (Multiple exit) N6=N61+N62+N63	N61= No. of students exits after 1st year via multiple entry and exit points in same batch	0	0	0	0	0	0	0	0
	N62= No. of students exit after 2nd year via multiple entry and exit points	0	0	0	0	0	0	0	0
	N63= No. of students exit after 3rd year via multiple entry and exit points in same batch	0	0	0	0	0	0	0	0
	N6=N61+N62+N63	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Table No. 4C: No. of students graduated within the stipulated period of the program.

Year of entry	Total no. of students (N1 + *N2* + N3+ N4+N5-N6 as defined above)	Number of students who have successfully graduated in the stipulated period of study **[Total of with Backlogs+ without Backlogs]**			
		I Year	II Year	III Year	IV Year
CAY (2025-26)	**131** (131+0+0+0+0+0)				
CAYm1 (2024-25)	**114** (114+0+0+0+0-0)	**114**			
CAYm2 (2023-24)	**83** (83+0+0+0+0-0)	**83**	**83**		
CAYm3 (2022-23)	**123** (123+0+0+0+0-0)	**123**	**116**	**116**	
CAYm4 (LYG) (2021-22)	**106** (106+0+0+0+0+0-0)	**106**	**104**	**100**	**95**
CAYm5 (LYGm1) (2020-21)	**45** (45+0+0+0+0-0)	**45**	**44**	**44**	**43**
CAYm6 (LYGm2) (2019-20)	**42** (42+0+0+0+0-0)	**42**	**42**	**42**	**42**
CAYm7 (LYGm3) (2018-19)	**45** (45+0+0+0+0-0)	**45**	**45**	**45**	**44**

4.1. Enrolment Ratio in the First Year (20)

ER Points = 20 * (Average ER/100)

Table No.4.1.1: Student enrolment ratio in the 1st year.

Item (Students enrolled in the First Year on average over 3 academic years (CAY, CAYm1 and CAYm2))	**CAY (2025-26)**	**CAYm1 (2024-25)**	**CAYm2 (2023-2024)**
N= Sanctioned intake of the program in the 1st year (as per AICTE/Competent authority)	120	120	120
N1= Total no. of students admitted in the 1st year minus the no. of students, who migrated to other programs/ institutions plus no. of students, who migrated to this program	131	114	83
N4= Total no. of students admitted in the 1st year via all supernumerary quotas	0	0	0
Enrolment Ratio (ER)= (N1+N4)/N	**109.17**	**95.00**	**69.17**
Average ER= (ER_1+ ER_2+ ER_3)/3		**91.11**	

ER Points= 20 * (Average ER/100) = 20 * (91.11/100) = **18.22**

4.2. Success Rate of the Students in the Stipulated Period of the Program (15)

Success Rate (SR) = (No. of students who graduated from the program in the stipulated course duration) /(No. of students admitted in the 1st year of that batch and those actually admitted in the 2nd year via lateral entry, plus the number of students admitted through multiple entry (if any) and separate division if applicable, minus the number of students who exited through multiple entry (if any).

Average SR = Mean of SR for the past three batches.

SR Points = 1.5 * Average SR/10.

Table No.4.2.1: The success rate in the stipulated period of a program.

Item	LYG (2021-22)	LYGm1 (2020-21)	LYGm2 (2019-20)
A*= (No. of students admitted in the 1st year of that batch and those actually admitted in the 2nd year via lateral entry, plus the number of students admitted through multiple entry (if any) and separate division if applicable, minus the number of students who exited through multiple entry (if any).	120 (100)	60 (45)	60 (42)
B=No. of students who graduated from the program in the stipulated course duration	95	43	42
Success Rate (SR)= (B/A) * 100	79.17	71.67	70.00
Average SR of three batches (SR_1+ SR_2+ SR_3)/3)	**73.61**		

SR Points = 1.5 * Average SR/10 = 1.5 * 73.61/10 = **11.04**

4.3. Academic Performance of the First-Year Students of the Program (10)

Academic Performance = Average Academic Performance Index (API), where

API = ((Mean of 1st Year Grade Point Average of all successful students on a 10-point scale) or (Mean of the percentage of marks of all successful students in 1st year/10)) * (Number of successful students/number of students appeared in the examination)

Successful students are those who have to proceeded to the 2nd year.

Table No.4.3.1: Academic Performance of the First-Year Students of the Program.

Academic Performance	CAYm1 (2024-25)	CAYm2 (2023-24)	CAYm3 (2022-23)
X= (Mean of 1st year grade point average of all successful students on a 10-point scale) or (Mean of the percentage of marks of all successful students in 1st year/10)	7.01	7.22	6.42
Y= Total no. of successful students	114	83	123
Z = Total no. of students appeared in the examination	114	83	123
API = X* (Y/Z)	7.01	7.22	6.42
Average API = (AP1 + AP2 + AP3)/3	**6.88**		

4.4 Academic Performance of the Second Year Students of the Program (10)

Academic Performance = Average Academic Performance Index (API), where

API = ((Mean of 2nd Year Grade Point Average of all successful students on a 10-point scale) or (Mean of the percentage of marks of all successful students in 2nd Year/10)) * (Number of successful students/number of students appeared in the examination).

Successful students are those who have proceeded to the 3rd year.

Table No.4.4.1: Academic Performance of the Second Year Students of the Program.

Academic Performance	CAYm1 (2024-25)	CAYm2 (2023-24)	CAYm3 (2022-23)
X= (Mean of 2nd year grade point average of all successful students on a 10-point scale) or (Mean of the percentage of marks of all successful students in 2rd year/10)	7.33	6.58	7.44
Y= Total no. of successful students	83	116	104
Z =Total no. of students appeared in the examination	83	123	106
API = X* (Y/Z)	7.33	6.21	7.30
Average API = (AP1 + AP2 + AP3)/3	**6.95**		

4.5 Academic Performance of the Third Year Students of the Program (10)

Academic Performance = Average Academic Performance Index (API), where

API = ((Mean of 3rd Year Grade Point Average of all successful students on a 10-point scale) or (Mean of the percentage of marks of all successful students in 3rd Year/10)) * (Number of successful students/number of students appeared in the examination).

Successful students are those who have proceeded to the 4th year.

Table No.4.5.1: Academic Performance of the Third Year Students of the Program

Academic Performance	CAYm1 (2024-25)	CAYm2 (2023-24)	CAYm3 (2022-23)
X= (Mean of 3rd year grade point average of all successful students on a 10-point scale) or (Mean of the percentage of marks of all successful students in 3rd year/10)	6.83	7.56	8.22
Y= Total no. of successful students	116	100	44
Z= Total no. of students appeared in the examination	116	104	44
API = X* (Y/Z)	6.83	7.27	8.22
Average API = (AP1 + AP2 + AP3)/3	**7.44**		

4.6 Placement, Higher Studies and Entrepreneurship (30)

Placement index points= 0.3 * Average placement index (P).

Table No. 4.6.1: Placement, higher studies, and entrepreneurship details.

Item	LYG (2021-22)	LYGm1 (2020-21)	LYGm2 (2019-20)
FS*=Total no. of final year students	120	60	60
X= No. of students placed	61	27	30
Y= No. of students admitted to higher studies	3	2	0
Z= No. of students taking up entrepreneurship	0	0	0
X + Y + Z =	64	29	30
Placement Index (P) = (((X + Y + Z)/FS) * 100)	53.33	48.33	50.00
Average placement index = (P_1 + P_2 + P_3)/3	**50.55**		

Note *: If the value of FS in Table No. 4.6.1 is less than the sum of the sanctioned intake (N) and the lateral entry including leftover seats (N2), then the value of FS in Table No. 4.6.1 should be the sum of the sanctioned intake (N) and the lateral entry including leftover seats (N2).

Placement index points= 0.3 * Average placement index (P). = 0.3*50.55 = **15.17**

4.7 Professional Activities (25)

4.7.1 Professional Societies/ Bodies, Chapters, Clubs, and Professional Engineering Events Organized (05)

(Provide a list of active professional societies/bodies, chapters, and clubs that exist at the departmental/cluster level in the past 3 years, and also provide a list of events organized by the professional societies, chapters, and clubs over the past 3 years.)

Table No. 4.7.1.1: List of active professional societies/bodies/chapters/clubs.

S.N.	Name of the Professional Societies/Bodies, Chapters, Clubs
1.	Indian Institute of Chemical Engineers (IIChE) Students Chapter, BIT Mesra

Table No. 4.7.1.2: List of events/programs organized.

S.N.	Name of the Professional Societies/Bodies/Chapters/ Clubs	Name of the Event	National/ International level	Date of Event
CAYm1 (2024-25)				
1	Indian Institute of Chemical Engineers (IIChE) Students Chapter, BIT Mesra	Coalescence' 25	National	7-9 March, 2025
CAYm2 (2023-24)				
1	Indian Institute of Chemical Engineers (IIChE) Students Chapter, BIT Mesra	Coalescence' 24	National	1-3 March, 2024
…				
CAYm3 (2022-23)				
1	Indian Institute of Chemical Engineers (IIChE) Students Chapter, BIT Mesra	Coalescence' 23	National	17-19 March 2023
..				
CAYm4 (2021-22)				
1				
..				

4.7.2 Student's Participations in Professional Events (10)

(Provide details of students, who have participated at other institutes in various professional events, such as hackathons, codeathons, ideathons, etc., over the past 3 years.)

Table No. 4.7.2.1: List of students participated in professional events.

S.N.	Name of the Student	Name of the Event	State /National/ International level	Date of Event	Name of the award if any
CAYm1 (2024-25)					
CAYm2 (2023-24)					
1					
..					
CAYm3 (2022-23)					
1					
..					
CAYm4 (2021-22)					
1	Abhishek Kumar Patra	Undergraduate track of the COINs Grand Challenge 2021	International	30/09/2021	COINs Grand Challenge, UK
..					

4.7.3 Publication of Journals, Magazines, Newsletters, etc. in the Department (05)

(Provide details of journals, magazines, newsletters, etc., published by the department, along with the names of the editors, issue numbers, volume numbers, and a list of students involved for the past 3 years.)

Table No. 4.7.3.1: List of students involved in publication of journals, magazines, and newsletters, etc. in the Department.

S.N.	Name of the Journal, Magazine, Newsletter	Name of the Editor	Name of the Student & Semester	No. of Issues	Hard copy/ Soft copy
CAYm1 (2024-25)					
1	ChemEletter (SP2025)	Dr. G.T. Mohanraj Dr. Anand Bharti Dr. Sangram Roy	Sakshi Sinha (K22)-VI SEM Vivek Raj Sinha - (K22)-VI SEM Siddharth Kaushal - (K22)-VI SEM Sanjay Thakur - (K22)-VI SEM Tanishka Jaiswal - (K22)-VI SEM	Vol.2	Hard & Soft Copy
CAYm2 (2023-24)					
1	ChemEletter (SP2024)	Dr. G.T. Mohanraj Dr. Anand Bharti Dr. Sangram Roy	Shreyash Zade (K21) – VI Sem Lily (K21) - VI Sem Ankita Singh (K21) - VI Sem Srishti Choudhary (K21) - VI Sem	Vol.1	Hard & Soft Copy
..					
CAYm3 (2022-23)					
1					
..					
CAYm4 (2021-22)					
1					
..					

4.7.4 Student Publications (05)

(Provide details of student publications in journals, conferences, etc., for the past 3 years.)

Table No. 4.7.4.1: List of student publications.

S.N.	Name of the Student & Semester	Name of the Publisher	Name of the Journal/ Conference, etc.	Volume No. & Issue No.	Name of the Award if any
CAYm1 (2024-25)					
1.	Akash Raj – VIII SEM	ASME	Journal of Thermal Science and Engineering Applications	16 (9)	Kumari, P., Raj, A., & Ghosh, D. (2024). Selection of Phase Change Material for Latent Heat Thermal Energy Storage Using a Hairpin Heat Exchanger: Numerical Study. Journal of Thermal Science and Engineering Applications, 16(9), 091005.
2.	Vinamr Saksena – VIII SEM Rishabh Jha – VIII SEM	ScienceDirect	Sustainable Chemistry for Climate Action	6	Kumari, P., Saksena, V., Jha, R., & Ghosh, D. (2025). Assessing sustainable latent heat energy storage of RT 35 phase change material in double pipe heat exchangers: A study on concentric and hairpin designs. *Sustainable Chemistry for Climate Action*, *6*, 100058.
3.	Akash Raj – VIII SEM Vinamr Saksena – VIII SEM Rishabh Kumar Jha – VIII SEM	Springer	Journal of Thermal Analysis and Calorimetry	150 (7)	Rajak, S. K., Raj, A., Saksena, V., Jha, R. K., Kumari, P., & Ghosh, D. (2025). Experimental and numerical analysis of simultaneous heating and cooling of phase change material for continuous application. *Journal of Thermal Analysis and Calorimetry*, *150*(7), 5541-5554.
CAYm2 (2023-24)					
1	Umang Raj – VIII SEM	Sage Journal	Polymers and Polymer Composites	32	Kumar, R., Mishra, S. K., Raj, U., Sengupta, S., Chatterjee, R., Pandey, S., ... & Jayapalan, S. (2024). Influence of graphene nanoplatelets (GnPs) and titanium dioxide (TiO2) hybrid fillers on the mechanical, thermal, and morphological performance of polypropylene (PP) based hybrid composites. Polymers and Polymer Composites, 32,

					09673911241260160.
..					
CAYm3 (2022-23)					
1	Sarvar Abbas – VIII SEM	Springer	Transactions of the Indian National Academy of Engineering	7 (3)	Pandit, A. B., Abbas, S., & Mukherjee, J. (2022). Mathematical modelling of pulsatile blood flow in straight rigid artery system. Transactions of the Indian National Academy of Engineering, 7(3), 1043-1057.
2	Suraj Paul – VIII SEM	ScienceDirect	Journal of Energy Storage	53	Ghosh, D., Ghose, J., Datta, P., Kumari, P., & Paul, S. (2022). Strategies for phase change material application in latent heat thermal energy storage enhancement: Status and prospect. Journal of Energy Storage, 53, 105179.
CAYm4 (2021-22)					
1	Dipanjan Kar – VIII SEM Adil Ahmad – VIII SEM	Springer Nature	Heat and Mass Transfer	58 (6)	Karmakar, A., Kar, D., Ahmad, A., & Jana, S. K. (2022). Design of a thermal desalination system with spray flash drum and condenser under vacuum based on droplet dynamics. Heat and Mass Transfer, 58(6), 933-948.
2	Ritika Sinha – VIII SEM	ScienceDirect	Journal of the Indian Chemical Society	99 (2)	Sinha, R., Sengupta, S., & Jayapalan, S. (2022). Effect of hybrid fillers on the mechanical behavior of polypropylene based hybrid composites. Journal of the Indian Chemical Society, 99(2), 100317.
3	Pragya Tiwary – VIII SEM Prabha Nisha Toppo – VIII SEM	Springer Nature	Sādhanā	7 (3)	Tiwary, P., Toppo, P. N., & Karmakar, A. (2022). Transient analysis and parameter estimation with optimizations in a plate heat exchanger. Sādhanā, 47(3), 125.

Criterion 5: FACULTY INFORMATION (100)

Sr.No	Name of the Faculty	PAN No.	APAAR faculty ID*(if any)	Highest degree	University	Area of Specialization	Date of Joining in this Institution	Experience in years in current institute	Designation at Time Joining in this Institution	Present Designation	The date on which Designated as Professor/ Associate Professor if any	Nature of Association (Regular/ Contract/ Ad hoc)	Currently Associated (Y/N)	In case of NO, Date of Leaving	IS HOD?
1	Dr. Gautam Sarkhel	AOGPS9255P	350634524284	Ph.D	Jadavpur University	Polymer Blend and Composite, Polymer Processing, Rheology	13/01/2001	24.4	Lecturer	Professor	01/04/2015	Regular	Yes		No
2	Dr. Sudipta Goswami	AECPG7502F	970313926254	Ph.D	University of Calcutta	Polymer Science and Technology, blends, composites, biomaterials	10/04/2006	19.1	Lecturer	Professor	01/04/2015	Regular	Yes		No
3	Dr. Akhil Kumar Sen	AYNPS1614H	497146483832	Ph.D	IIT Bombay	Colloid and Interfacial Science	02/08/2004	20.10	Lecturer	Professor	02/01/2023	Regular	Yes		No
4	Dr. Arup Choudhury	AHXPC8384P	666378076852	Ph.D	BIT Mesra	Polymer Science and Technology	02/04/2007	18.2	Lecturer	Associate Professor	23/12/2019	Regular	Yes		
5	Dr. Rajeshwari Chatterjee	AIUPC7977Q	638578851676	Ph.D	IIT (ISM) Dhanbad	Renewable Energy	12/01/2023	2.4	Lecturer	Assistant Professor		Regular	Yes		
6	Dr. Sumit K. Jana	AJWPJ4153A	544650860568	Ph.D	University of Calcutta	Multiphase Flow, ANN, Bio-Fuel, Biomass, Catalysis	01/07/2008	16.11	Lecturer	Assistant Professor		Regular	Yes		
7	Dr. Anupam Roy	CDPPR8321H	911160690363	Ph.D	IIT Kharagpur	Food Process Engineering	18/07/2016	8.10	Assistant Professor	Assistant Professor		Regular	Yes		
8	Dr. Abhijit Mondal	CBQPM8344G	133712985705	Ph.D	Jadavpur university	Chemical Engineering	02/09/2021	3.8	Assistant Professor	Assistant Professor		Regular	Yes		
9	Dr. Pulak Datta	AEYPD6039G	197976104123	Ph.D	Jadavpur University	Polymer, Nanocomposite, Biosensor, Food valorization	15/09/2009	15.8	Lecturer	Assistant Professor		Regular	Yes		
10	Dr. Sudeepan J	CAYPS0954B	225360804913	Ph.D	Jadavpur university	Tribology of Polymer Composites, Fluid Mechanics, Polymer Processing	04/09/2009	15.8	Lecturer	Assistant Professor		Regular	Yes		No
11	Dr. Debasree Ghosh	ASQPG9630E	784622495249	Ph.D	Jadavpur University	Chemical Engineering	21/10/2009	15.7	Lecturer	Assistant Professor		Regular	Yes		No

12	Dr. Amit Kumar Tiwari	ADGPT2926D	894055632404	Ph.D	BIT Mesra	Food Processing and Preservation, Waste biomass Utilization	18/05/2017	8	Assistant Professor	Assistant Professor		Regular	Yes		No
13	Dr. Bidhan Chandra Ruidas	BTNPR1223H	677834772753	Ph.D	IIT Kharagpur	Enhanced oil recovery	02/03/2015	10.2	Assistant Professor	Assistant Professor		Regular	Yes		No
14	Dr. Anand Bharti	AQHPB2325C	802981684705	Ph.D	IIT Guwahati	Separation Processes, Phase Equilibria, Thermodynamics, Molecular Simulation, Process Modeling and S	28/01/2020	5.4	Assistant Professor	Assistant Professor		Regular	Yes		No
15	Dr. Arnab Karmakar	BZSPK5301E	830307655138	Ph.D	NIT Durgapur	Thermal Fluid, Two- Phase Thermosyphon Loop, Thermal Hydraulic Instability, and Boiling Flow	16/02/2015	10.3	Assistant Professor	Assistant Professor		Regular	Yes		No
16	Dr. Yogendra Nath Prajapati	CIDPP2757C	815894637882	Ph.D	IIT Kanpur	Advanced Catalysis for Energy and Environmental Applications, Abatement of Air and Water Pollution,	28/01/2020	5.4	Assistant Professor	Assistant Professor		Regular	Yes		No
17	Dr. Saikat Bhattacharjee	BGBPB2814D	NA	Ph.D	IIT Kharagpur	Micro Fluidics, Membrance Separation	09/03/2023	2.2	Assistant Professor	Assistant Professor		Regular	No	27/05/2025	No
18	Dr. Sangram Roy	AVQPR7734R	766228013298	Ph.D	IIT Delhi	Multiphase reaction engineering, Process Intensification	27/06/2023	1.11	Assistant Professor	Assistant Professor		Regular	Yes		No
19	Dr. Aniruddha Deb	BRZPD2448C	349446825569	Ph.D	IIT Guwahati	Biosensors & Healthcare	28/02/2024	1.2	Assistant Professor	Assistant Professor		Regular	Yes		No
20	Dr. Iman Sengupta	CWRPS5259Q	147395737093	Ph.D	IIT Kharagpur	Nanomaterials, 2D materials	30/07/2024	0.9	Assistant Professor	Assistant Professor		Regular	Yes		No
21	Dr. S. Y. Jejurkar	AKGPJ8779D	282555145221	Ph.D	IIT Kanpur	Multiphase flows, unsteady flows, combustion	28/07/2023	1.10	Assistant Professor	Assistant Professor		Regular	Yes		No
22	Dr. Rohit Kumar	CSQPK4918R	584893229045	Ph.D	IIT Delhi	Heterogeneous Catalysis, CO2 Conversion, Methane Activation, Clean Energy Production	09/08/2021	1.1	Assistant Professor	Assistant Professor		Regular	No	29/09/2022	No
23	Dr. Amarnath Mishra	AYGPM6410N	826338294599	Ph.D	Jai Prakash University, Chapra	Polymer, Water Pollution, Food Technology	21/01/2009	16.4	Lecturer	Assistant Professor		Regular	Yes		No

24	Dr. S. Mukherjee	CSLPM7362L	484561527186	Ph.D	IIT Kharagpur	Microfluidics, complex fluids, soft matter	10/06/2024	0.6	Assistant Professor	Assistant Professor		Regular	No	16/12/2024	No
25	Dr. G.T. Mohanraj	AQUPG8633M	784416008120	Ph.D	IIT Khargpur	Biomass conversion & adsorption, alternative fuels, electrochemical/vapor sensors, conducting polymer	16/08/2011	13.9	Assistant Professor	Associate Professor	02/08/2021	Regular	Yes		Yes
26	Dr. Aparna Patel	AKBPY1700A	214257979750	Ph.D	NIT Raipur	Chemical and Bio-process Engineering, Environmental Engineering	01/09/2025	0.3	Assistant Professor	Assistant Professor		Regular	Yes		No
27	Dr. Chayan Sarkar	CRBPS8892Q	672538023952	Ph.D	IIT Kharagpur	Energy and Environment, Electrochemical Engineering, Photocatalysis, Nanomaterials, ML	06/10/2025	0.2	Assistant Professor	Assistant Professor		Regular	Yes		No
28.	Dr. Kona Mondal	BTJPM1291G	244186013080	PhD	IIT Guwahati	Bionanomaterials, Biomass utilization, Edible coating, Active packaging, Bio-composites, Biopolymer based packaging, Food shelf-life study	31/10/2025	0.15	Assistant Professor	Assistant Professor		Regular	Yes		No

5.1 Student-Faculty Ratio (SFR) (30)

(SFR to be calculated at Department level considering all UG and PG engineering programs in the Department; include allied department programs/clusters as well.)

No. of UG(Engineering) programs in Department including allied departments/ clusters (UGn):
UG1=1st UG program
UGn=nth UG program
B= No. of Students in UG 2nd year (ST)
C= No. of Students in UG 3rd year (ST)
D= No. of Students in UG 4th year (ST)
No. of PG (Engineering) programs in Department including allied departments/ clusters (PGm):
PG1=1st PG program.
PGm=mth PG program
A= No. of Students in PG 1st year
B= No. of Students in PG 2nd year
Student Faculty Ratio **(SFR)** = S/F
S= No. of students of all programs in the Department including all students of allied departments/clusters.
No. of students (ST)=Sanctioned Intake (SA)+ Actual admitted students via lateral entry including leftover seats (L) if any (limited to 10 % of SA)
Students who admitted under supernumerary quotas (SNQ, EWS, etc) will not be considered in calculating SFR value. Those students are exempted.
F=Total no. of regular or contractual faculty members (Full Time) in the Department, including allied departments/clusters (excluding first year faculty (The faculty members who have a 100% teaching load in the first-year courses)).

UG

No. of UG(Engineering) programs in Department including allied departments/clusters (UGn): 3

Chemical Engineering (Plastic & Polymer)						
Year of Study	CAY (2025-26)		CAYm1 (2024-25)		CAYm2 (2023-24)	
	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	0	0	60	0	60	0
3rd Year	0	0	60	0	60	0
4th Year	0	0	60	0	60	0
Sub-Total	**0**	**0**	**180**	**0**	**180**	**0**
Total	**0**		**180**		**180**	

Chemical Engineering						
Year of Study	CAY (2025-26)		CAYm1 (2024-25)		CAYm2 (2023-24)	
	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	120	0	120	0	120	0
3rd Year	120	0	120	0	120	0
4th Year	120	0	120	0	120	0
Sub-Total	**360**	**0**	**360**	**0**	**360**	**0**
Total	**360**		**360**		**360**	

Food Engineering and Technology						
Year of Study	CAY (2025-26)		CAYm1 (2024-25)		CAYm2 (2023-24)	
	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	30	0	30	0	0	0
3rd Year	30	0	0	0	0	0
4th Year	0	0	0	0	0	0
Sub-Total	**60**	**0**	**30**	**0**	**0**	**0**
Total	**60**		**30**		**0**	

Grand Total	420	570	540

PG

No. of PG Programs in the Department 0

Grand Total			

SFR

No. of UG Programs in the Department 3

No. of PG Programs in the Department 0

Chemical Engineering (Plastic & Polymer) Chemical Engineering (Food Engineering and Technology)

Description	CAY (2025-26)	CAYm1 (2024-25)	CAYm2 (2023-24)
UG1.B			
UG1.C			
UG1.D			
UG1: Chemical Engineering (Plastic & Polymer)			
UG2.B	120	120	120
UG2.C	120	120	120
UG2.D	120	120	120
UG2: Chemical Engineering	**360**	**360**	**360**
UG3.B	30	30	0
UG3.C	30	0	0
UG3.D	0	0	0
UG3: Food Engineering and Technology	**60**	**30**	**0**
DS=Total no. of students in all UG and PG programs in the Department	420	390	360
AS=Total no. of students of all UG and PG programs in allied departments	0	0	0
S=Total no. of students in the Department (DS) and allied departments (AS)	**S1=** 420	**S2=** 390	**S3=** 360
DF=Total no. of faculty members in the Department	**25**	**23**	**21**
AF= Total no. of faculty members in the allied Departments	0	0	0
F=Total no. of faculty members in the Department (DF) and allied Departments (AF)	**F1=** 25	**F1=** 23	**F2=** 21
FF=The faculty members in F who have a 100% teaching load in the first-year courses	0	0	0
Student Faculty Ratio (SFR)=S/(F-FF)	**SFR1= 16.8**	**SFR1= 16.96**	**SFR2= 17.14**
Average SFR for 3 years	**SFR= 16.97**		

Average SFR for three assessment years: **16.97**

Assessment SFR: **28**

5.2 Faculty Qualification (25)

Year	X	Y	RF	FQ = 2.5 x [(10X + 4Y) / RF)]
2025-26 (CAY)	**25**	**0**	**21**	**29.76**
2024-25 (CAY m1)	23	0	19.00	30.26
2023-24 (CAYm2)	21	0	18.00	29.17

Average Assessment: **29.73**

5.3 Faculty Cadre Proportion (25)

Year	Professors		Associate Professors		Assistant Professors	
	Required F1	Available	Required F2	Available	Required F3	Available
CAY (2025-26)	**2.0**	**3.0**	**4.0**	**2.0**	**14.0**	**20.00**
CAY m1 (2024-25)	2.00	3.00	4.00	2.00	13.00	18.00
CAYm2 (2023-24)	2.00	3.00	4.00	2.00	12.00	16.00
Average Numbers	2.00	3.00	4.00	2.00	13.00	18.00

Cadre Ratio Marks [(AF1 / RF1) + [(AF2 / RF2) * 0.6] + [(AF3 / RF3) * 0.4]] * 12.5 : **25.00**

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

(Provide details of participation and contributions in teaching, learning, or practical work by visiting, adjunct, emeritus faculty, professors of practice, etc., from industry, research organizations & reputed institutions as well as retired professors, during the assessment period.)

Table No. 5.4.1: List of visiting/adjunct faculty/professor of practice and their teaching and practical loads.

(CAY m1) 2024-25

S. No	Name of the Person	Designation	Organization	Name of the Course	No. of hours handled

(CAY m2) 2023-24

S.No	Name of the Person	Designation	Organization	Name of the Course	No. of hours handled
1	Dr. Pradip Munshi	Visiting Faculty	M/s CISCHEM, Vadodara, Gujarat	counseling, pedagogy, new courses	10.00

(CAY m3) 2022-23

S.No	Name of the Person	Designation	Organization	Name of the Course	No. of hours handled
1					

5.5 Faculty Retention (10)

Description	2024-25 (CAYm 1)	2023-24 (CAYm 2)	2022-23 (CAYm 3)
RF=No. of required faculty in the Department including allied Departments to adhere to the 20:1 Student-Faculty ratio, with calculations based on both student numbers and faculty requirements as per section 5.1 of SAR; (RF=S/20).	19.5	18	18
AF=The no. of available faculty members in the Department including allied Departments	23	21	17
A= The no. of faculty members at the current institute with less than 1 year of experience (A in AF)	2	0	0
B= The no. of faculty members at the current institute with more than 1 year and less than 2 years of experience (B in AF)	2	2	0
C= The no. of faculty members at the current institute with more than 2 years and less than 3 years of experience (C in AF)	1	2	0
D= The no. of faculty members at the current institute with more than 3 years and less than 4 years of experience (D in AF)	0	1	1
E= The no. of faculty members at the current institute with more than 4 years of experience (E in AF)	18	16	16
FR=(((A*0) +(B*1)+(C*2)+(D*3)+(E*4))/RF) *2.50 (points limited to 10)	10	10	9

Average : **9.67**

Assessment Marks : **9.67**

6. FACULY CONTRIBUTIONS (120)

6.1 Professional Development Activities (60)

6.1.1 Memberships in Profession Societies at National/International Levels (5)

(Provide details of faculty members, who have active recognized professional memberships and their positions and contributions to professional societies during the assessment period.)

Table No. 6.1.1.1: List of faculty members and their memberships.

S.No	Name of the Faculty	Name of the Professional Society /Body at National and International Level	Name of the Grade/ Level/Position
1	Dr. Gautam Sarkhel	Indians Institute of Chemical Engineers	LM-48356
2	Dr. Gautam Sarkhel	Indian Society for Technical Education	LM-56296
3	Dr. Sudipta Goswami	The Institution of Engineers (India)	M-144263-5
4	Dr. Sudipta Goswami	Indian Society for Technical Education	LM 56297
5	Dr. Akhil Kumar Sen	Indian Society for Technical Education	Life Member LM 46532
6	Dr. Akhil Kumar Sen	Indian Society for Surface Science and Technology	Life Member L/M-S-87
7	Dr. Akhil Kumar Sen	Materials Research Society of India (MRSI)	Life Member LMB2082
8	Dr. Sumit K. Jana	Indians Institute of Chemical Engineers	LM-22286
9	Dr. Anupam Roy	Association of Food Scientists & Technologists (India) (AFSTI)	Life Member_AFST/LM/9-2018/ZON/2
10	Dr. Abhijit Mondal	The Institution of Engineers (India)	M-158212-1
11	Dr. Pulak Datta	Indians Institute of Chemical Engineers	LM-73611
12	Dr. Debasree Ghosh	Indians Institute of Chemical Engineers	LM-51908
13	Dr. Amit Kumar Tiwari	Association of Food Scientists & Technologists (India) (AFSTI)	Life Member (AFST/LM/9-2018/ZON/2423)
14	Dr. Amit Kumar Tiwari	The Biotech Research Society (BRSI)	Life Member (LM-970)

6.1.2 Faculty as Resource Persons or Participants in STTPs/FDPs (10)

6.1.2.1 **Faculty as Resource Persons in STTPs/FDPs** (5)

(Provide details of the faculty involved as resource persons in STTP/FDP events during the assessment period.)

Table No. 6.1.2.1: List of faculty members as resource person in STTP/FDP events.

((CAY m1) 2024-25

S.No	Name of the Faculty as Resource Person	Name of the STTP/FDP	Date (DD/MM/YYYY)	Location	Organized by
1					

(CAY m2) 2023-24

S.No	Name of the Faculty as Resource Person	Name of the STTP/FDP	Date (DD/MM/YYYY)	Location	Organized by
1	Dr. Anand Bharti	Winter School on Quantum Chemical Calculations and Molecular Dynamics Simulations	07/01/2024	IIT Guwahati	Department of Chemical Engineering, Indian Institute of Technology Guwahati
2	Dr. Anupam Roy	Key enabling technologies in millet: Agri (Farm) to Food processing (Folk) (KETM-23)	05/06/2023	Rourkela	Dept. of Food Process Engineering, National Institute of Technology, Rourkela
3	Dr. Anupam Roy	Gelatinization induced whole grain rice fortification as an alternative to extrusion-based rice fort	21/02/2024	IIT Kharagpur	AGFE, IIT Kharagpur

(CAY m3) 2022-23

S.No	Name of the Faculty as Resource Person	Name of the STTP/FDP	Date (DD/MM/YYYY)	Location	Organized by
1	Dr. Anand Bharti	Understanding of Molecular Simulation (UMS-2023)	21/06/2023	Online	Department of Chemical Engineering, National Institute of Technology Rourkela
2	Dr. Anand Bharti	Advanced Analytical and Simulation Techniques in Chemical Engineering Applications	27/11/2022	BIT Mesra, Ranchi	Department of Chemical Engineering, BIT Mesra, Ranchi

6.1.2.2 **Faculty Members' Participation in STTPs/FDPs** (5)

(Provide details of faculty participated in STTP/FDP events during the assessment period with special reference to the faculty competency for the program under consideration for accreditation. Please do not give duplicate data from the section 6.1.4.)

Name of the faculty	Max 5 Per Faculty		
	2024-25 (CAYm1)	2023-24 (CAYm2)	2022-23 (CAYm3)
Dr. Amit Kumar Tiwari	2.00	0.00	0.00
Dr. Sangram Roy	1.00	0.00	0.00
Dr. Aniruddha Deb	3.00	0.00	0.00
Dr. Iman Sengupta	2.00	0.00	0.00
Dr. Rajeshwari Chatterjee	0.00	1.00	0.00
Dr. G.T. Mohanraj	0.00	0.00	0.00
Dr. Anupam Roy	0.00	0.00	0.00
Dr. Bidhan Chandra Ruidas	0.00	0.00	0.00
Dr. Anand Bharti	0.00	0.00	1.00
Sum	8.00	1.00	1.00
RDF = Number of faculty required to comply with the 20:1 student - faculty ratio in the Department alone, as per section 5.1 of SAR (RDF= DS / 20).	19.50	19.50	18.00
Assessment Points (AP)= (Sum/(0.5* RDF)) (Points limited to 5 for each assessment year)	0.82	0.10	0.11

Average assessment over 3 years: **0.34**

6.1.3 **Faculty Contribution in Development of SWAYAM MOOCs and other E-Content** (5)

(Provide details of faculty members developed courses for various educational initiatives, including SWAYAM MOOCs/SWAYM PLUS/NPTEL, e-PG Pathshala and other e-contents during the assessment period.)

Table No. 6.1.3.1: List of faculty members developed MOOC courses for the past 3 years.

S.No	Name of the Faculty	Name of the Course Developed and available online on Swayam platform by your Department faculty
1	Dr. Anand Bharti	Chemical Process calculation (CL 217) https://sites.google.com/bitmesra.ac.in/anandbharti/home
2	All Faculty	https://bitmesra.ac.in/edudepartment/content/1/69/20

6.1.4 **Faculty Certification of MOOCs through SWAYAM, etc.** (10)

(Provide details of faculty members, who have obtained MOOCs (Massive Open Online Courses) certification through platforms like SWAYAM/SWAYM PLUS/NPTEL and other approved programs during the assessment period.)

Table No. 6.1.4.1: List of faculty members obtained certification of MOOCs for the past 3 years.

S.No	Name of the Faculty	Name of Course Passed	Course Offered by (agency)	Grade obtained if any
1	Dr. Bidhan Chandra Ruidas	National Initiative for Technical Teachers Training-Module 1_Orientation Towards Technical Education and Curriculum Aspects	NITTT-AICTE	Passed
2	Dr. Bidhan Chandra Ruidas	National Initiative for Technical Teachers Training- Module 8_ Institutional Management & Administrative Procedures	NITTT-AICTE	Passed
3	Dr. Bidhan Chandra Ruidas	National Initiative for Technical Teachers Training- Module- 6: Student Assessment and evaluation	NITTT-AICTE	Passed
4	Dr. Bidhan Chandra Ruidas	National Initiative for Technical Teachers Training- Module 5_ Technology Enabled Learning & Life Long Self Learning	NITTT-AICTE	Passed
5	Dr. Bidhan Chandra Ruidas	National Initiative for Technical Teachers Training-Module 3_ Communication Skills, Modes & Knowledge Dissemination	NITTT-AICTE	Passed
6	Dr. Bidhan Chandra Ruidas	National Initiative for Technical Teachers Training-Module 7_ Creative Problem Solving, Innovation and Meaningful R & D	NITTT-AICTE	Passed
7	Dr. Bidhan Chandra Ruidas	National Initiative for Technical Teachers Training-Module 2_ Professional Ethics & Sustainability	NITTT-AICTE	Passed
8	Dr. Bidhan Chandra Ruidas	National Initiative for Technical Teachers Training-Module 4_ Instructional Planning and Delivery	NITTT-AICTE	Passed

6.1.5 **FDP/STTP Organized by the Department** (10)

(Provide details of the number of faculty development programs and short-term training programs organized by the department individually or in collaboration with other departments over the past 3 years.)

Table No. 6.1.5.1: List of FDPs/STPs organized by Department for the past 3 years.

(CAY m1) 2024-25

S.No	Name of the Program	Date of the Program (DD/MM/YYYY)	Duration	Name of the Speaker & Designation and Organization	No. of People Attended
1					

(CAY m2) 2023-24

S.No	Name of the Program	Date of the Program (DD/MM/YYYY)	Duration	Name of the Speaker & Designation and Organization	No. of People Attended
1					

(CAY m3) 2022-23

S.No	Name of the Program	Date of the Program (DD/MM/YYYY)	Duration	Name of the Speaker & Designation and Organization	No. of People Attended
1					

6.1.6 **Faculty Support in Student Innovative Projects** (10)

(Provide details of faculty supports as a mentor, facilitator, etc. in student innovation projects in various events like hackathons, codeathons, ideathons, open research, etc.)

Table No. 6.1.6.1: List of faculty members involved in student innovative projects.

(CAY m1) 2024-25

S. No	Name of the Faculty	Name of the Event	Date of the Event (DD/MM/YYYY)	Place of Event	Website Link if any
1.	Dr. Abhijit Mondal	U.G. Project presentation on Environment and Polymer field	06/05/2025	BIT Mesra	
2.	Dr. Arnab karmakar	U.G. Project presentation on Thermal Fluid and boiling flow	07/05/2025	BIT Mesra	
3.	Dr. Anand Bharti	U.G. Project presentation on Molecular simulation	06/05/2025	BIT Mesra	
4.	Dr. Sangram Roy	U.G. Project presentation on Computational study of CO2 adsorption with MOFs	07/05/2025	BIT Mesra	
5.	Dr. Debasree Ghosh	U.G. Project presentation on Energy storage	06/05/2025	BIT Mesra	

(CAY m2) 2023-24

S. No	Name of the Faculty	Name of the Event	Date of the Event (DD/MM/YYYY)	Place of Event	Website Link if any
1.	Dr. Sangram Roy	Sustain-A-Thon 2024 (Sustainability Hackathon), IOCL	21/05/2024	Online	https://unstop.com/competitions/sustain-a-thon-2024-sustainability-hackathon-by-indian-oil-corporati
2.	Dr. Debasree Ghosh	Chemcon 2023	27-30/12/2023	Kolkata	https://iiche.org.in/chemcon2023/CHEMCON%202023%20Book%20of%20Abstracts.pdf
3.	Dr. Debasree Ghosh	International Chemical Engineering Conference on Energy, Environment, and Sustainability (ICECEES-20	15-17/02/2024	IIT Roorkee	https://iitr.ac.in/Departments/Chemical%20Engineering%20Department/Activities/Conferences%20and%20Wo
4.	Dr Pulak Datta	U.G. Project presentation on Energy field	09/05/2024	BIT Mesra	
5.	G T Mohanraj	U.G. Project presentation on Environmental and Separation	08/05/2024	BIT Mesra	
6.	Dr. Sudipta Goswami	U.G. Project presentation on Material processing	09/05/2024	BIT Mesra	

(CAY m3) 2022-23

S. No	Name of the Faculty	Name of the Event	Date of the Event (DD/MM/YYYY)	Place of Event	Website Link if any

1	Dr. Debasree Ghosh	Net-Zero Emission Technologies (NOET 2022)	12-13/12/2022	IIT(ISM) Dhanbad	https://people.iitism.ac.in/~download/images/Brochure_N0ET_2022.pdf
2	Dr. Debasree Ghosh	International Conference on Thermo-Fluids and System Design (ICTFSD 2022)	22-23/03/2022	BIT Mesra	https://conference.bitmesra.ac.in/ictfsd/Home
3.	Dr. Anupam Roy	U.G. Project presentation on Food processing and CFD	10/05/2022	BIT Mesra	

6.1.7 **Faculty Internship/Training/Collaboration with Industry** (10)

(Provide details of faculty members who have undergone internships or training in industry and research organizations, or a list of faculty members who are actively collaborating with industry.

The outcomes of internships, training, and collaborations including the number of programs organized for students and faculty members, the development of working models and prototypes, the publication of joint research papers, the number of funded projects received, etc. for the assessment period.)

Table No. 6.1.7.1: Faculty internship/training/collaboration details.

S. No	Name of the Faculty	Name of the Internship/ Training/ Collaboration	Name of the Company & Place	Duration	Outcomes of Internship/ Training/ Collaboration
1	Dr. Akhil Kumar Sen	Research Internship	Dasaldhan PharmaChem Limited (DPCL), Gujarat	2025	Research collaboration
2	Dr. G. T. Mohnraj, Dr. B. C. Ruidas and Dr. Aniruddha Deb	Industry collaboration	Indobell Insulations Ltd., Kolkata	2024 - 2025	Research Collaboration
3	Dr. Anupam Roy	Industry collaboration	Avankia Software Private Limited, Bangalore	2025	Industrial project Collaboration
4	Dr. Anupam Roy	Industry collaboration	Twin Engineers, Vadodara	2023 - 2025	Research related Machine development
5	Dr. Anupam Roy	International Academic collaboration	University of GEORGIA, USA	2024 - 2025	Student and Faculty exchange for research, Research Collaboration
6.	Dr. Sudeepan J	Industrial Collaborative (MoU Signed)	John Deere India Pvt. Ltd., Pune	2023 - 2024	Industrial Consultancy Project

6.2 **Research and Development Activities** (60)

6.2.1 Academic Research (10)

(Provide details of compiled list including research papers, available online or in hard- copy, from reputable publishers and should be list of Scopus/WoS. Only papers with the faculty member's affiliation aligned with the current institution are considered. Each entry in the comprehensive list includes details such as DOI, publisher, and month/year of publication.

Table No. 6.2.1.1: Faculty publication details.

S.No.	Item	2024-25 (CAY m1)	2023-24 (CAY m2)	2022-23 (CAY m3)
1	No. of peer reviewed journal papers published	71	47	40
2	No. of peer reviewed conference papers published	0	2	1
3	No. of books/book chapters published	6	7	14

6.2.2 Ph.D. Student Details (5)

(No. of Ph.D. students' enrollment and graduated in the Department during the assessment period.)

Table No. 6.2.2.1: Ph.D. details.

S.No.	Item	2024-25 (CAY m1)	2023-24 (CAY m2)	2022-23 (CAY m3)
1	No. of students enrolled for Ph.D. in the Department	3	8	2
2	No. of Ph.D. students graduated in the Department	3	3	0

6.2.3 Development Activities (10)

(Provide details of patents granted/published, working models, and prototypes developed by faculty members in the last 3 years.)

Patent details:

1. A Rotating Electrochemical Reactor Using Boron-doped Diamond and Titanium Electrodes for Degrading Polystyrene Microplastics, and Method Thereof, Dr. Abhijit Mondal, 202431087019A, 22/11/2024.

2. An Electro-Chemical Batch Reactor (ECBR) for Degradation of Polyethylene Terephthalate (PET) Microplastics (MPs) in Water, Dr. Abhijit Mondal, 202531006308A, 31/01/2025.

3. A method for evaluating the uniformity of reinforcement distribution and detecting agglomeration in filler-reinforced composites, and system thereof, Dr. Sudeepan Jayapalan, 202531008060 A, 07/02/2025.

4. A solar still apparatus and method of use thereof, Dr. Anand Bharti, 202431028924A, 19/04/2024.

5. An integrated apparatus for blanching, sterilization, drying, and recovery of volatile components, Dr. Anupam Roy, 202331085872A, 19/04/2024.

6. A Method for Fortification of Whole Grain Puffed Rice, Dr. Anupam Roy, 202331036336A, 06/10/2023.

7. A Method for Fortification of Grains, Dr. Anupam Roy, 202311010189, 23/08/2024.

8. A multipurpose integrated apparatus for treatment of powder, flaked and granular material, Dr. Anupam Roy, 202331085871A, 19/04/2024

Technology development details:

1. Protein and micronutrient fortified puffed rice, Dr. Anupam Roy, Project No.- 5/9/1302/2020-Nut, 2023.

2. Micronutrient fortified puffed rice, Dr. Anupam Roy, 2023.

3. Process technology and process machinery for phytic acid reduction in Pulses, Dr. Anupam Roy, Project No.- BT/PR38036/PFN/20/1486/2020,2023.

4. Microwave-assisted-vacuum-steam-vacuum (MAVSV) process technology for spice sterilization, Dr. Anupam Roy, Project No.- BT/PFN/20/1486/2020, 2023.

5. Enhancing resistant starch of puffed rice, Dr. Anupam Roy, Project No.- ECR/2018/002856, 2023.

6. Resistant starch rich rice, Dr. Anupam Roy, Project No.- ECR/2018/002856, 2023.

7. Process technology exploring expanded porous matrix of makhana for essential oils delivery, Dr. Anupam Roy, Project No.- 3/1/239/2021-Nut, 2023.

8. Process technology exploring expanded porous matrix of puffed rice as nutraceuticals delivery, Dr. Anupam Roy, Project No.- 3/1/239/2021-Nut, 2022.

9. Process technology and process machinery for fortified rice, Dr. Anupam Roy, Project No.- 5/9/1226/2019/Nut, 2023.

6.2.4 Sponsored Research Project (15)

(Provide details of funded research projects from the external sources including Corporate Social Responsibility (CSR). List includes Principal Investigator (PI), Co-PI name, name of the dept where project is sanctioned, project title, funding agency, sanctioned amount, duration and sanctioned year. Also, provide the cumulative funding amount received during CAYm1, CAYm2, and CAYm3. Please do not give duplicate data from the sections 6.2.5 and 6.2.6.)

2024-25 (CAY m1)

PI Name	Co-PI names if any	Name of the Dept., where project is sanctioned	Project Title*	Name of the Funding agency	Duration of the project	Amount (Lacs)
Dr. Arup Choudhury	Nil	Chemical Engineering	Waste nutshell-derived porous carbon nanofibers and their hybrid mats as supercapacitor electrode	BRNS	3 years	31.85
Dr. Anupam Roy	Dr. Amit Kumari Tiwari	Chemical Engineering	Design and development of makhana (fox nut) processing unit through the development of short-term roasting, popping and grading machine.	Asha & Sajjan Agarwal Foundation	2 years	16.50
Dr. Anupam Roy	Dr. Bidhan Chandra Ruidas	Chemical Engineering	Design and development of short-time microwave assisted vacuum-steam-vacuum (MAVSV) process technology for simultaneous reduction of rancidity-causing enzymes and antinutrients in millet: Enhancing shelf life and micronutrient bioavailability.	DBT	2 years	29.54
						Amount received (Rs.): 77.89

2023-24 (CAY m2)

PI Name	Co-PI names if any	Name of the Dept., where project is sanctioned	Project Title*	Name of the Funding agency	Duration of the project	Amount (Lacs)

2022-23 (CAY m3)

PI Name	Co-PI names if any	Name of the Dept., where project is sanctioned	Project Title*	Name of the Funding agency	Duration of the project	Amount (Lacs)
Dr. Arup Choudhury	NIL	Chemical Engineering	Development of 3DFlexible Hybrid Mat based on Waste Sugarcane Bagasse-derived Carbon Nanofibers and metal organic frameworks (MOFs)for Fabrication of Next Generation Flexible/Wearable Supercapacitors	DST, SERB	3 years	25.33
Dr. Gautam Sarkhel	Dr. Arup Choudhury	Chemical Engineering	Study the effect of stretching on the physico-mechanical properties of acrylates	DRDO	2.5 years	81.33
Dr. Pulak Dutta	Dr. Arup Choudhury	Chemical Engineering	Development of Radiation, Chemical and Flame-Resistant High-Performance Polymer Composite for Defence Application	DRDO	3 years	36.72
Dr. Abhijit Mondal	Dr. Anand Bharti	Chemical Engineering	Degradation of polystyrene microplastics (PMSs) from wastewater using Novel Continuous Rotating Electro-Chemical Reactor (CRECR)	ICMR	3 years	44.17
						Amount received (Rs.): 187.55

Total Amount (Lacs) Received for the Past 3 Years: 265.44

Note*:

- Only sponsored research projects will be considered. Infrastructure-based projects will not be considered here.

6.2.5 Consultancy Work (15)

(Provide details of consultancy projects from the external sources. List includes Principal Investigator (PI), Co-PI name, name of the dept where project is sanctioned, project title, funding agency, sanctioned amount, duration and sanctioned year. Also, provide the cumulative funding amount received during CAYm1, CAYm2, and CAYm3. Please do not give duplicate data from the sections 6.2.4 and 6.2.6.)

2024-25 (CAY m1)

PI Name	Co-PI names if any	Name of the Dept., where project is sanctioned	Project Title*	Name of the Funding agency	Duration of the project	Amount (Lacs)
						Amount received (Rs.): 0

2023-24 (CAY m2)

PI Name	Co-PI names if any	Name of the Dept., where project is sanctioned	Project Title*	Name of the Funding agency	Duration of the project	Amount (Lacs)
Dr. N Kumar	Dr. Sudeepan J	Civil Engineering	Environment impact study and base line study and post impact assessment around project, Jharkhand Plastic Park, Devipur, Deoghar, Jharkhand	JIIDCO, Jharkhand	6 months	5.90
						Amount received (Rs.):5.90

2022-23 (CAY m3)

PI Name	Co-PI names if any	Name of the Dept., where project is sanctioned	Project Title*	Name of the Funding agency	Duration of the project	Amount (Lacs)
Dr. Sudeepan J	NIL	Chemical Engineering	Development of Polymer Blends for the Enhancement of Friction coefficient Factor	John Deere India Pvt. Ltd., Pune	1 year	1.94
						Amount received (Rs.):1.94

Total amount (Lacs) received for the past 3 years: 7.84

Note*:

- Only consultancy projects will be considered. Infrastructure-based projects will not be considered here.

6.2.6 Institution Seed Money or Internal Research Grant to its Faculty for Research Work (5)

(Provide details of faculty members received Institution seed money grants to its faculty for research work. Also, provide the cumulative funding amount received and utilized during CAYm1, CAYm2, and CAYm3. Please do not give duplicate data from the sections 6.2.4 and 6.2.5. The outcomes of the project are no. of publications, no. of working models/prototypes, no. of Ph.D. students graduated, no. of M.E students graduated, amount generated, etc.)

6.2.6 A Amount received (3)

S.N.	Faculty name	Project title/ Support for Activity	Duration	Amount (Lacs)	Amount Utilized (Lacs)	Outcomes of the project
2024-25 (CAYm1)						
1	Dr. Aniruddha Deb	Noise induced dynamics of DNA through nanoporous gel for biomedical applications	2 years	5.00	3.00	Received ICMR project grant based on this research work.
Amount received (Rs.): 5.00 Lacs						
2023-24 (CAYm2)						
1	Dr. Sangram Roy	Development of coil flow Inverters for post Combustion capture of CO2	2 years	5.00	4.05	Produced two UG projects and developed one fabricated prototype.
2	Dr. Saikat Bhattacharya	Reduction of fouling in polymeric membranes using AC electric field	2 years	5.00	4.71	Developed one fabricated experimental prototype
Amount received (Rs.)					10.00 Lacs	
2022-23 (CAYm3)						
1	Dr. Abhijit Mondal	Intensified Air Moisture Harvester Device: Approach towards sustainable & renewable application	2 years	5.00	4.04	Produced two UG projects and developed one fabricated prototype.
Amount received (Rs.)					5.00 Lacs	
Total amount (Lacs) received for the past 3 years					20	

6.2.6 B Amount utilized (2)

The total amount of **Rs. 15.8 Lacs** are utilized from those above-mentioned 3 SEED grant project.

Criterion 7: Facilities and Technical Support (100)

7.1. Adequate and Well-Equipped Laboratories, and Technical Manpower (40)

(Provide details of various laboratories for the program and at the department level. Also, please provide a list of technical support staff appointed by the College for the Department and their qualifications. Please do not give duplicate data from the sections 7.2 and 7.5.)

Table No.7.1.1: List of laboratories and technical manpower.

S. N.	Name of the Laboratory	No. of students per setup (Batch Size)	Name of the major equipment	Weekly utilization status (all the courses for which the lab is utilized)	Technical Manpower support		
					Name of the technical staff	Designation	Qualification
1	Chemical Engineering Laboratory I	3-4	Venturimeter, Orificemeter, Rotameter; Centrifugal Pump Test Rig; Plate & Frame Filter Press;	3 days	Dr. Swaraj Sengupta	Sr. Tech. Superintendent	M.Sc., (Chemistry) PGDPPT, Ph.D
2	Chemical Engineering Laboratory I	3-4	Sieve Shaker; Bucket elevator;	3 days	Mr. Sanjay Manjhi	Sr. Tech. Superintendent	BE(Chemical Engg) ME(Polymer Engg)
3	Chemical Engineering Laboratory I	3-4	Flow over Notches Friction in Pipes;	3 days	Mr. Baijnath Mahato	Jr. Tech. Superintendent	Diploma in Mechanical Engg
4	Chemical Engineering Laboratory I	3-4	Ball Mill; Cyclone Separator;	3 days	Mr. Ramkishore Mahato	Technician	Diploma in Mechanical Engg
5	Chemical Engineering Laboratory I	3-4	Power requirement in Agitation.	3 days	Mr. SalikRam Mahato	Technician	B.A.
6	Chemical Engineering Laboratory II	3-4	Heat transfer by conduction through flat composite wall; Heat transfer through lagged pipe; York Schiebel Liquid Liquid Agitation column; Fluidized Bed Dryer; Cooling TowerPlate Heat Exchanger; Spiral Heat Exchanger, Hallow fibre membrane test skid.	3 days	Dr. Swaraj Sengupta	Sr. Tech. Superintendent	M.Sc., (Chemistry) PGDPPT, Ph.D

7	Chemical Engineering Laboratory II	3-4	Batch Distillation column; Pressure drops in packed bed;	3 days	Mr. Sanjay Manjhi	Sr. Tech. Superintendent	BE(Chemical Engg) ME(Polymer Engg)
8	Chemical Engineering Laboratory II	3-4	Heating and cooling in Agitated vessel; Tapped Density meter; ; Packed Bed (stacked Packing)	3 days	Mr. Baijnath Mahato	Jr. Tech. Superintendent	Diploma in Mechanical Engg
9	Chemical Engineering Laboratory II	3-4	Wetted wall column; Shell and tube Heat Exchanger; Sieve tray Tray Dryer. Batch distillation column; Spray Dryer; Steam distillation plant;	3 days	Mr. Ramkishore Mahato	Technician	Diploma in Mechanical Engg
10	Chemical Engineering Laboratory II	3-4	Batch crystallizer; fixed bed Liquid Adsorption;	3 days	Mr. SalikRam Mahato	Technician	B.A.
11	Chemical Engineering Laboratory III	3-4	Batch Reactor under Isothermal Conditions. Coil Tube type Plug Flow Reactor under Isothermal Conditions; Continuous Flow Stirred Tank Reactor; Cascade Continuous Flow Stirred Tank Reactor (CSTR); RTD CSTR using a Pulse Tracer.	3 days	Dr. Swaraj Sengupta	Sr. Tech. Superintendent	M.Sc., (Chemistry) PGDPPT, Ph. D
12	Chemical Engineering Laboratory III	3-4	Solar Energy-Photovoltaic cell Solar Energy - Thermal energy Energy storage by phase change material; Junkers Calorimeter; Bomb Calorimeter; Wind Energy	3 days	Mr. Ramkishore Mahato	Technician	Diploma in Mechanical Engg
13	Chemical Engineering Laboratory III	3-4	Viscometers: Redwood I, Redwood II, Engler, Saybolt Flash Point Apparatus	3 days	Mr. Sanjay Manjhi	Sr. Tech. Superintendent	BE(Chemical Engg) ME(Polymer Engg)

14	Chemical Engineering Laboratory III	3-4	RTD Plug Flow Reactor using a Pulse Tracer; Condensation Polymerisation Set Up; Emulsion Polymerisation Setup; Hydrogen Peroxide Decomposition Photocatalytic Reaction by UV rays	3 days	Mr. SalikRam Mahato	Technician	B.A.
15	Process Control & Instrumentation Laboratory	3-4	Control Valve Characteristics; Temperature measurement–RTD, Thermocouple and Bimetal Dial Thermometer.	2 days	Dr. Swaraj Sengupta	Sr. Tech. Superintendent	M.Sc., (Chemistry) PGDPPT, Ph.D
16	Process Control & Instrumentation Laboratory	3-4	Level Control Trainer; Flow Control Trainer	2 days	Mrs. Minakshi Bonde	Jr. Tech. Superintendent	B.Sc
17	Process Control & Instrumentation Laboratory	3-4	Pressure Control Trainer; Multi Process Trainer;	2 days	Mr. Baijnath Mahato	Jr. Tech. Superintendent	Diploma in Mechanical Engg
18	Process Control & Instrumentation Laboratory	3-4	Flapper-Nozzle System; Study of I/P and P/I converter	2 days	Mr. Ramkishore Mahato	Technician	Diploma in Mechanical Engg
19	Process Control & Instrumentation Laboratory	3-4	Dead Weight Pressure Guage tester;	2 days	Mr. SalikRam Mahato	Technician	B.A.
20	Computer Aided Process Engineering Lab. (Central CAD Lab)	1	MATLAB; ASPEN PLUS; Ansys	2 days	Mrs. Minakshi Bonde	Jr. Tech. Superintendent	B.Sc
21	Design Lab (Classroom)	1	Design of shell and tube heat exchangers; Design of plate distillation column; Design of packed absorption column; Design of rotary dryer; Design of pressure vessels; Design of tray tower; Design of cooling tower; Design of crystallizer (with crystal size distribution).	2 days	Mrs. Minakshi Bonde	Jr. Tech. Superintendent	B.Sc

22	Plant Design (Classroom)	1	Manual calculation of material and energy balance for a process involving several processing units; Process integration and pinch technology; Costing and project evaluation; General site consideration; Process flowsheet development and optimization using Aspen Plus	2 days	Mrs. Minakshi Bonde	Jr. Tech. Superintendent	B.Sc
23	Polymer Processing Laboratory	3-4	Blow Moulding M/c. PLC based L& T M/c;Kolsite Blown Film and PVC pipe Plant, PVC mixer; Kolsite single screw extractor; Compression moulding machine Film &Pipe Testing Instruments. Twin-screw extruder; thermoforming machine; Plastic welding- Ultrasonic and hot air; Injection Moulding M/c; Analog Windsor Injection Moulding; Two roll mill for rubber compounding; Melt Flow Indexer	1 days	Dr. Swaraj Sengupta	Sr. Tech. Superintendent	M.Sc., (Chemistry) PGDPPT, Ph. D
24	Synthesis Laboratory	3-4	Rotary Evaporator; Water Baths, High pressure reactors; Vacuum Oven, Furnace	1 days	Mr. Sanjay Manjhi	Sr. Tech. Superintendent	BE(Chemical Engg) ME(Polymer Engg)

7.2. Additional Facilities Created for Improving the Quality of Learning Experience in Laboratories (20)

(Provide details of various additional facilities provided by the department to enhance the quality of learning in laboratories. Please do not give duplicate data from the sections 7.1 and 7.5.)

Table No.7.2.1: List of additional facilities.

S. N.	Name of the Facility	Details	Purpose for creating facility	Utilization	Relevance to POs/PSOs
1.	Department Computer Lab (Location: Pharmacy Building – 3rd Floor – Chemical Engg.,)	20+ modern desktop computers with high RAM and dedicated GPUs. Licensed software: MATLAB, Aspen Plus.	To enable UG and PhD students to perform simulation, data analysis, design, and modelling relevant to the curriculum and research.	Laboratories are actively used by faculty for funded research projects; Final-year UG and PhD students utilize lab resources for research and project Simulation.	PO1, PO2, PO5, PO12; PSO1, PSO2
2.	Interacting and Non-Interacting Non-Linear Process Trainer (ACE 305) (Location: PCI Lab – 2nd Floor – Lecture Hall 3 & 4)	Process Control & Instrumentation Lab Facility	Equip students with skills in instrumentation, analysis relevant to industry and research.	Used during UG PCI Lab for real-time data acquisition and control studies	PO1, PO2, PO4, PO5; PSO1
3.	Heat Exchanger System - Computerized (ACE 602B) (Location: PCI Lab – 2nd Floor – Lecture Hall 3 & 4)	Process Control & Instrumentation Lab Facility	Equip students with skills in instrumentation, analysis relevant to industry and research.	Used during UG PCI Lab for real-time data acquisition and control studies	PO1, PO2, PO4, PO5; PSO1
4.	Fuel Cell Machine Setup (Location: Ground Floor – Chemical Engg.,)	Fuel cell experimentation and performance analysis	To enable UG and PhD students to perform experiment relevant to the fuel cell and research	Used by final-year UG students and PhD researchers for energy system studies and research	PO1, PO4, PO5, PO12; PSO2
5.	Ultrafiltration Membrane Setup (Location: PCI Lab – 2nd Floor – Lecture Hall 3 & 4)	Bench-scale ultrafiltration unit	To provide students with practical exposure to membrane separation processes used in wastewater treatment	Used by UG and PhD students for lab experiments, project work, and research involving filtration	PO1, PO2, PO4, PO5, PO7; PSO1, PSO2
6.	Access to Virtual Labs (Computer Lab - Location: Pharmacy Building – 3rd Floor – Chemical Engg.,)	IIT Virtual Labs and NPTEL lab sessions through departmental systems	To supplement physical lab learning with digital simulations	Used by students for virtual experiments, data interpretation, and assignments	PO1, PO2, PO12; PSO1

7.	Power Backup for Laboratories (All Labs)	Generator/inverter connections for uninterrupted operations	To ensure consistent learning and experimentation without disruptions	All major labs connected; ensure continuity during outages	PO1, PO11
8.	Pilot-Scale Equipment (Location: Beside CE Lab II)	Small-scale distillation columns	Helps bridge gap between theoretical and industrial applications	Used in CE Lab II, and UG research work	PO1, PO2, PO4, PO5; PSO1, PSO2

7.3. Maintenance of Laboratories and Overall Ambiance (10)

(Provide details of overall laboratories maintenance and overall ambiance in the Department.)

Laboratory Maintenance Overview – Department of Chemical Engineering

All laboratories in the Department of Chemical Engineering are well maintained to ensure smooth academic and research activities.

- Each laboratory is assigned to a Professor-in-Charge responsible for its operation and upkeep.
- A Laboratory Safety & Maintenance Committee oversees the overall maintenance and functionality of the laboratories across the department.
- Minor issues, such as equipment malfunctions or electrical problems, are promptly attended to by the departmental technical staff, often in coordination with the Central Workshop and the Central Electricity Department.
- For major breakdowns, the respective equipment manufacturers are contacted, and formal work orders are issued for repairs.
- For sophisticated analytical instruments, Annual Maintenance Contracts (AMCs) are secured at the time of procurement. Every effort is made to renew these AMCs regularly to ensure uninterrupted operation and minimize downtime.

1. Daily Maintenance Tasks

- Benchtop and Equipment surface Cleaning.
- Waste disposal (chemical, sharps etc.,) in designated bins.
- Check water taps, gas valves, and power outlets for leaks or hazards.

2. Weekly/Monthly Maintenance

- Inspect and clean air filters in fume hoods
- Check inventory of chemicals, glassware, and consumables

3. Equipment Maintenance

- Follow manufacturer guidelines for preventive maintenance
- Maintain logbooks for major equipment

4. Safety Checks

- Emergency eyewash and shower stations
- Check fire extinguishers, first aid kits, and spill kits

5. Documentation and Record-Keeping

- Maintain SOPs (Standard Operating Procedures)
- Update maintenance logs for equipment

Laboratory Overall Ambience – Department of Chemical Engineering

The overall ambience of the Chemical Engineering laboratories is reasonably good.

- Sufficient number of windows are available to ensure effective ventilation and adequate natural light.
- Lighting system is very effective, along with the natural light in every corner of the rooms.
- An adequate number of ceiling/wall-mounted fans are installed to maintain comfortable working conditions.
- Each laboratory is equipped with cupboards to safely store spare parts, glassware, and laboratory instruments.
- Properly designed and sufficient tables are provided for housing equipment and conducting experiments.
- Adequate seating arrangements, including stools for students, are available for comfortable working.
- Analytical Instrumentation and computer Laboratories are air-conditioned for improved equipment stability and operator comfort.
- All laboratories have access to a consistent and good-quality water supply.
- Generator backup is available in all laboratories to ensure uninterrupted power supply during outages.

7.4. Safety Measures in Laboratories (10)

(Provide details of various safety measures deployed in each laboratory within the Department.)

Table No. 7.4.1: List of various safety measures in laboratories.

S.N.	Name of the Laboratory	Safety measures
1.	Chemical Engineering Lab-I	First-aid kits; Proper use of electric devices; Fire extinguisher, sand bucket, water bucket; Lab apron, Insulated gloves, safety goggles, Rubber gloves, Disposable gloves; Waste Disposal Protocols; Emergency Exits and Signage; Emergency Contact Numbers Displayed; Power Backup; Equipment Safety Instructions; Laboratories are equipped with MCBs; Chemical Storage Cabinets.
2.	Chemical Engineering Lab-II	First-aid kits; Proper use of electric devices; Fire extinguisher, sand bucket, water bucket; Lab apron,

		Insulated gloves, safety goggles, Rubber gloves, Disposable gloves; Waste Disposal Protocols; Emergency Exits and Signage; Emergency Contact Numbers Displayed; Power Backup; Equipment Safety Instructions; Laboratories are equipped with MCBs; Chemical Storage Cabinets.
3.	Chemical Engineering Lab-III	First-aid kits; Proper use of electric devices; Fire extinguisher, sand bucket, water bucket; Lab apron, Insulated gloves, safety goggles, Rubber gloves, Disposable gloves; Waste Disposal Protocols; Emergency Exits and Signage; Emergency Contact Numbers Displayed; Power Backup; Equipment Safety Instructions; Laboratories are equipped with MCBs; Chemical Storage Cabinets.
4.	Synthesis Lab	First-aid kits; Proper use of electric devices; Fire extinguisher, sand bucket, water bucket; Lab apron, Insulated gloves, safety goggles, Rubber gloves, Disposable gloves; Waste Disposal Protocols; Emergency Exits and Signage; Emergency Contact Numbers Displayed; Power Backup; Equipment Safety Instructions; Laboratories are equipped with MCBs; Chemical Storage Cabinets.
5.	Polymer Processing Lab	First-aid kits; Proper use of electric devices; Fire extinguisher, sand bucket, water bucket; Lab apron, Insulated gloves, safety goggles, Rubber gloves, Disposable gloves; Waste Disposal Protocols; Emergency Exits and Signage; Emergency Contact Numbers Displayed; Power Backup; Equipment Safety Instructions; Laboratories are equipped with MCBs; Chemical Storage Cabinets.
6.	Project and Research Lab - I, II, III, IV, V, VI & VII	First-aid kits; Proper use of electric devices; Fire extinguisher, sand bucket, water bucket; Lab apron, Insulated gloves, safety goggles, Rubber gloves, Disposable gloves; Waste Disposal Protocol ; Emergency Exits and Signage; Emergency Contact Numbers Displayed; Power Backup; Equipment Safety Instructions; Laboratories are equipped with MCBs; Chemical Storage Cabinets.
7.	Biochemical Engg. Lab	First-aid kits; Proper use of electric devices; Fire extinguisher, sand bucket, water bucket; Lab apron, Insulated gloves, safety goggles, Rubber gloves, Disposable gloves; Waste Disposal Protocols; Emergency Exits and Signage; Emergency Contact Numbers Displayed; Power Backup; Equipment Safety Instructions; Laboratories are equipped with MCBs; Chemical Storage Cabinets.
8.	PG Lab	First-aid kits; Proper use of electric devices; Fire extinguisher, sand bucket, water bucket; Lab apron, Insulated gloves, safety goggles, Rubber gloves, Disposable gloves; Waste Disposal Protocols; Emergency Exits and Signage; Emergency Contact Numbers Displayed; Power Backup; Equipment Safety Instructions; Laboratories are equipped with MCBs;

		Chemical Storage Cabinets.

7.5. Project Laboratory/Research Laboratory /Centre of Excellence (20)

(Provide details of laboratories for supporting projects, research, Centre of Excellence, innovation, and startups etc. Please do not give duplicate data from the sections 7.1 and 7.2.)

Table No. 7.5.1: List of project laboratory/research laboratory /Centre of Excellence.

S.N.	Name of the Laboratory
1.	PG Laboratory (Location: Ground Floor – Main Chemical Department Building)
2.	Biochemical Engineering Lab (Location: Ground Floor – Main Chemical Department Building)
3.	Project and Research Lab – I (Specialization: Electrochemical sensors & supercapacitors) (Location: First Floor – Main Chemical Department Building)
4.	Project and Research Lab - II (Specialization: Electrospinning & others) (Location: First Floor – Main Chemical Department Building)
5.	Project and Research Lab - III (Specialization: Clean Energy and Microplastic degradation) (Location: First Floor – Main Chemical Department Building)
6.	Project and Research Lab - IV (Specialization: BioSensor & Healthcare) (Location: First Floor – Main Chemical Department Building)
7.	Project and Research Lab -V (Specialization: Alternative Fuels & Polymer composites) (Location: Third Floor – Pharmacy Building - Chemical Department)
8.	Project and Research Lab - VI (Specialization: Membrane Separation) (Location: Third Floor – Pharmacy Building - Chemical Department)
9.	Project and Research Lab - VII (Specialization: Polymer) (Location: Inside Polymer Processing Lab)
10.	Project Workshop Laboratory (Beside Chemical Engineering Lab II)
11.	Centre for Food Engineering & Technology – Food Chemistry & Quality Control Lab I; Food Chemistry & Quality Control Lab II; Food Process Engineering and Technology Lab I; Food Process Engineering and Technology Lab II; Food Microbiology Lab (Location: Lecture Hall III & IV)

Criterion 8: CONTINUOUS IMPROVEMENT (80)

8.1 Actions taken based on the results of evaluation of each of the COs, POs & PSOs (40)

8.1.1 Actions Taken Based on the Results of Evaluation of the COs Attainment (20)

(Identify the areas of weaknesses in the program based on the analysis of evaluation of COs attainment levels. Measures identified and implemented to improve COs attainment levels for the assessment year (CAYm1) including curriculum intervention, pedagogical initiatives, support system improvements, etc.)

1. Areas of Weakness Identified:

a. Attainment for slow learners: Certain students consistently underperformed, lowering overall course attainment averages.
b. Difficulty in problem-based courses: Students found it hard to integrate knowledge from multiple subjects when solving complex problems.
c. Communication and teamwork-related COs attainment: Group projects and presentations revealed gaps in technical report writing and effective communication.

2. Measures Identified and Implemented for Improvement

Curriculum Interventions

a. Introduced mini-projects to enhance application and design-oriented learning.
b. Updated laboratory manuals and experiments to include simulation-based and industrial problems.
c. Integrated skill-based modules (software tools, industry case studies, etc.) into selected courses.

Pedagogical Initiatives

a. Adoption of active learning techniques (quiz-based learning, peer learning).
b. Increased focus on problem-solving sessions and assignments linked with industrial problems.
c. Regular use of ICT tools (NPTEL/SWAYAM resources, simulation software, online interactive platforms) to supplement teaching.

Support System Improvements

a. Establishment of bridge/remedial classes for slow learners.
b. Mentoring and tutorial hours to support weaker students.
c. Strengthened interactions with outside world through guest lectures.
d. e-resource access improved to support self-learning.

Monitoring and Feedback

a. Continuous monitoring of CO attainment through periodic tests.
b. Collection of student feedback and alumni/industry feedback to identify skill gaps.
c. Implementation of corrective actions in subsequent semesters (course content adjustments, more practice problems).

8.1.2 Actions Taken Based on the Results of Evaluation of the POs/PSOs Attainment (20)

(Identify the areas of weaknesses in the program based on the analysis of evaluation of POs/PSOs attainment levels. Measures identified and implemented during two years to improve POs attainment levels including curriculum intervention, pedagogical initiatives, support system improvements, etc.)

The following criterion was set to assess the performance of each course in terms of PO attainments:

< 50%	Poor
50% - 60%	Average
60% - 70%	Good
70% - 80%	Very Good
> 80%	Excellent

POs & PSOs Attainment Levels and Actions for improvement based on 2021 batch:

POs	Target Level	Attainment Level	Observations
PO1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.			
PO1	70.00	80.00	**Observations:** **1.** Overall attainment is above the target. **2.** In 17 courses, attainment was more than 80%. **3.** In courses, namely CL 201 Thermodynamics, and CL 229 Macromolecular Science, attainment was between 60-70 %.
Action to improve attainment: **1.** CL 201 Thermodynamics is a core chemical engineering course and thus require more effort to achieve an attainment more than 70%. For this more tutorials will be provided to the students. Some extra classes will be conducted especially for the weak students.			
PO2: 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.			
PO2	70.00	78.67	**Observations:** **1.** Overall attainment is above the target. **2.** In 13 courses, attainment was more than 80%.

			3. In courses, namely CL 201 Thermodynamics, CL 229 Macromolecular Science, CL 329 Transport Phenomena, CL 349 Polymer Processing, CL 332 Chemical Engineering Lab-III, and CL 429 Chemical Process Intensification, attainment was between 60-70 %.
Action to improve attainment: 1. CL 201 Thermodynamics, CL 329 Transport Phenomena and Chemical Engineering Lab-III are core chemical engineering course and thus require more effort to achieve an attainment more than 70%. 2. For this more tutorials to be provided to the students. 3. Some extra classes to be conducted especially for the weak students.			
PO3: 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.			
PO3	70.00	76.33	**Observations:** **1.** Overall attainment is above the target. **2.** In 11 courses, attainment was more than 80%. **3.** In courses, namely CL 201 Thermodynamics, CL 229 Macromolecular Science, CL 304 Computer Aided Process Engineering Lab, CL 329 Transport Phenomena, CL 349 Polymer Processing, CL 355 Petrochemical Technology, CL 400M Minor Project, CL 406 Process Control and Instrumentation Lab and CL 429 Chemical Process Intensification, attainment was between 60-70 %. **4.** In course, CL 332 Chemical Engineering Lab-III attainment is < 60%.
Action to improve attainment: **1.** CL 201 Thermodynamics, and CL 329 Transport Phenomena are core chemical engineering courses and thus require more effort to achieve an attainment more than 70%. More tutorials to be provided and extra classes to be conducted for the weak students. **2.** CL 304 Computer Aided Process Engineering Lab and CL 406 Process Control and Instrumentation Lab need extra attention. Emphasis on the results and analysis to be improved. **3.** For CL 400M Minor Project, students to be encouraged to put more focus on the results and analysis of the project.			
PO4: 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.			
PO4	70.00	77.00	**Observations:** **1.** Overall attainment is above the target.

			2. In 12 courses, attainment was more than 80%. **3.** In courses, namely CL 304 Computer Aided Process Engineering Lab and CL 400M Minor Project, attainment was between 50-60 %. **4.** In course, CL 332 Chemical Engineering Lab-III attainment is < 50%.

Action to improve attainment:

For CL 304 Computer Aided Process Engineering Lab:

1. To conduct remedial sessions to bridge knowledge gaps in process simulation and modeling tools.
2. To provide tutorials to prepare students for simulation tasks.
3. To encourage peer-to-peer learning through discussions.
4. To organize software training workshops (Aspen Plus, MATLAB etc.) in collaboration with expert/alumni.
5. To provide extended lab hours for hands-on practice.

For CL 400M Minor Project:

1. To strengthen mentoring and supervision for projects students with regular guidance meetings.
2. To train students in technical write-up for better presentation of project work.

For CL 332 Chemical Engineering Lab-III:

1. To link experiments with industrial case studies to improve motivation and perceived relevance.
2. To provide remedial support through doubt-clearing sessions.
3. To encourage peer mentoring.
4. To implement frequent oral questioning during lab to strengthen conceptual clarity.

PO5: 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.

PO5	70.00	77.33	**Observations:** **1.** Overall attainment is above the target. **2.** In 10 courses, attainment was more than 80%. **3.** In courses, namely CL 229 Macromolecular Science, CL 329 Transport Phenomena, CL 304 Computer Aided Process Engineering Lab and CL 400M Minor Project, attainment was between 60-70 %. **4.** In CL 332 Chemical Engineering Lab-III attainment is < 60%.

Action to improve attainment:

For attainment between 60-70%:

1. Conduct remedial lectures/tutorials on difficult concepts.
2. Assign problem-solving assignments.

For attainment between <60%:

1. To link experiments with industrial case studies to improve motivation and perceived relevance.
2. To provide remedial support through doubt-clearing sessions.
3. To encourage peer mentoring.
4. To implement frequent oral questioning during lab to strengthen conceptual clarity.

PO6: 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.

PO6	70.00	78.00	**Observations:** **1.** Overall attainment is above the target. **2.** In 13 courses, attainment was more than 80%. **3.** In CL 332 Chemical Engineering Lab-III and CL 429 Chemical Process Intensification attainment is < 60%.

Action to improve attainment:

1. To be improved through remedial sessions, enhanced practical training, rubric-based evaluation and industry-oriented exposure.

PO7: 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.

PO7	75.00	78.00	**Observations:** **1.** Overall attainment is above the target. **2.** In 12 courses, attainment was more than 80%. **3.** In courses, namely, CL 229 Macromolecular Science, CL 329 Transport Phenomena, CL 349 Polymer Processing, and CL 332 Chemical Engineering Lab III, attainment was between 60-70 %.

Action to improve attainment:

1. To integrate sustainability aspects into assignments.
2. To introduce experiments/projects on energy and, environment.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO8	75.00	78.00	**Observations:** **1.** Overall attainment is above the target. **2.** In 8 courses, attainment was more than 80%. **3.** In courses CL 332 Chemical Engineering Lab III attainment was < 60 %.

Action to improve attainment:

1. Conduct mandatory lab safety and ethics orientation at the beginning of the course.
2. Emphasize ethical reporting of data.
3. Organize interactive sessions/seminars on professional ethics.

<table>
<tr><td colspan="4">PO9: Individual and teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.</td></tr>
<tr><td>PO9</td><td>70.00</td><td>78.33</td><td>Observations:
1. Overall attainment is above the target.
2. In 14 courses, attainment was more than 80%.
3. In courses, CL 349 Polymer Processing and CL 332 Chemical Engineering Lab III, attainment was < 60 %.</td></tr>
<tr><td colspan="4">Action to improve attainment:
1. Introduce group projects to cultivate collaborative learning.
2. Promote interactive classroom sessions.
3. Motivate students to participate in individual events such as paper presentation in technical seminars.</td></tr>
<tr><td colspan="4">PO10: 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.</td></tr>
<tr><td>PO10</td><td>75.00</td><td>79.33</td><td>Observations:
1. Overall attainment is above the target.
2. In 14 courses, attainment was more than 80%.
3. In courses, MC 300 summer internship and CL 349 Polymer Processing, attainment was between 60-70 %.</td></tr>
<tr><td colspan="4">Action to improve attainment:
1. Organize pre-internship workshops on technical report writing and presentation skills.
2. Teacher to encourage students to participate in question answer session / teacher student interaction.
3. Encourage students to publish their project works in the varius conferences and scientific communities.</td></tr>
<tr><td colspan="4">PO11: 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.</td></tr>
<tr><td>PO11</td><td>70.00</td><td>76.00</td><td>Observations:
1. Overall attainment is above the target.
2. In 7 courses, attainment was more than 80%.
3. In course CL 332 Chemical Engineering Lab III and MC300 summer internship, attainment was < 60 %.</td></tr>
<tr><td colspan="4">Action to improve attainment:
1. Lectures on Financial management by faculty from Entrepreneurship Development Cell and Department of Management.
2. Ask students to include a “Project Management & Cost Analysis” section in their internship report.</td></tr>
</table>

3. Students are encouraged to organize and manage technical events of Students chapter of IIChE.			
PO12: 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.			
PO12	75.00	78.00	**Observations:** **1.** Overall attainment is above the target. **2.** In 11 courses, attainment was more than 80%. **3.** In course CL 332 Chemical Engineering Lab III, attainment was < 60 %.
Action to improve attainment: 1. Encourage self learning – Power Point presentation, Project report on Frontier areas of Chemical Engineering. **2.** Assignment on literature review on technological changes in various areas of chemical engineering. 3. Guest lectures.			
PSO1: To develop students' understanding of the core scientific, mathematical and engineering principles conceive and design processes to produce, transform and transport materials (chemical products) - beginning with experimentation in the laboratory and followed by implementation of technologies in full-scale production.			
PSO1	70.00	78.00	**Observations:** **1.** Overall attainment is above the target. **2.** In 12 courses, attainment was more than 80%. **3.** In course CL 332 Chemical Engineering Lab III, attainment was < 60 %.
Action to improve attainment: 1. Strengthening analysis in the laboratory courses. 2. Guest Lectures on Scale up in designing of chemical industry. 3. Take up more designed based projects in the field of Chemical Engineering. 4. Guest lecture by Industry personnel.			
PSO2: To prepare students for professional work in development, design, modelling, simulation, optimization and operation of chemical products and processes.			
PSO2	70.00	78.33	**Observations:** **1.** Overall attainment is above the target. **2.** In 13 courses, attainment was more than 80%. **3.** In course CL 332 Chemical Engineering Lab III, attainment was < 60 %.
Action to improve attainment: **1.** Students are to be encouraged to take up final year projects in the various area of designing, process simulation and optimization. **2.** Guest lecture by Industry personnel.			
PSO3: To prepare students with high scholastic attainment to enter graduate programs leading to advanced degrees in chemical engineering or in related professional, scientific, and engineering fields.			
PSO3	70.00	78.67	**Observations:**

			1. Overall attainment is above the target. **2.** In 12 courses, attainment was more than 80%. **3.** In course CL 332 Chemical Engineering Lab III, attainment was < 60 %.
Action to improve attainment: **1.** Students are to be encouraged to take up collaborative projects with students and faculty of other Departments. **2.** Students encouraged to take up Industry collaborative projects with joint guidance of BIT faculty and Industry for final semester credited project.			

In general, following actions are planned to improve the attainment level:

1. Assignments/Tutorials related to real-life problems and industrial problems.
2. Surprise quiz on important topics.
3. Special focus on weak students through extra classes, tutorials and assignments.
4. Guest lecture by Industry personnel.

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

(Academic audit system/process and its implementation in relation to continuous improvement.)

The academic audit is being regularly conducted by an external agency, **S S Kothari Mehta Co.LLP.**

Additionally, in 2024-2025, the institution has also initiated a structured **Academic Audit system** to ensure systematic evaluation and enhancement of academic processes.

The process involves:

Step 1: Collection of Data: In a standardised format from Departments.

Step 2: Assessment and Score Calculation: As per Academic Audit Guidelines

Step 3: SWOT Analysis and Recommendations: First at Departmental Level as well as at Institute Level.

Step 4: External committee evaluation: Finally, the evaluation and action plan is to be done by the external committee duly constituted by the Institute.

Step 1: Format for data collection

Name of Campus							
Name of Department:							
					Placement and Higher studies		
Student Strength (If more than one program either in UG or PG, please input the summation value)	AY 2024-25				Graduate Students	AY 2024-25	
	Sanctioned Strength	Enrolled Students Strength			Students Enrolled in Final Year (UG+PG)		
UG Program (Year 1)					Students Graduated (UG+PG)		
UG Program (Year 2)					How many of these students were placed?		
UG Program (Year 3)					How many of these opted for higher studies?		
UG Program (Year 4)							
UG Program (Year 5) if applicable					Total No. of PhD students in the Department		
Total UG	0	0			No. of PhD students graduated		
PG Program (Year 1)							
PG Program (Year 2)							
Total PG	0	0			Outreach Activities	Y/N	Count (in AY 2024-25)
Total (UG + PG)	0	0			No. of Conferences/Workshops//Seminars etc. organized by the Department		
					No. of faculty members who visited abroad		
Faculty Qualification	AY 2024-25				No. of faculty members who attended Conferences, Workshops, FDPs, MDPs, Short Term Training Programs etc. within India		
Total Faculty in 2023-24					No. of MoUs (all active MoUs with Activity Reports)		
How many faculty with PhD degree?					No. of Awards/Recognitions received by faculty		
How many faculty with Post graduate degree?					No. of faculty who delivered Invited Talks		
Financial Resource Utilization	FY 2024-25						
Amount of Budget allocated to Department (Rs)					Accreditation Related Activities (Part A)	Count (AY 2024-25)	
Amount Utilized (Rs)					Number of Departmental Societies and Club Activities		
					Number of Professors of Practice and Chair Professors		
Research and Professional Practices	Calendar Year 2024				Number of New courses introduced		
No. of Unique Publications published by the Department					Number of books and book chapters published by the department		
No. of publications in WoS database?							
No. of publications only in Scopus database but not in WoS database?					Accreditation Related Activities (Part B)	Y/N	
No. of Patents Granted (exclude design patent)					Implementation of Feedback Analysis and Action Taken Report		
No. of Patents Published (exclude design patent)					Implementation of Mentor-Mentee System		
					Implementation of OBE in all programs (applicable to programs eligible for NBA)		
Amount (Rs) received from	FY 2024-25						
Govt. Sponsored R&D Projects							
Consultancy Projects							
CSR Projects							
External agencies or registration for participation to organize FDPs, MDPS, EDPs etc.							
Govt. agencies or external agencies for Organizing Certificate Programmes / Training Workshops/Seminars/confernce/symposium etc.		Date	Place		Name and Signature of Head of Department		
Total	0						

Step 2: Assessment and Score Calculation: As per Academic Audit Guidelines

Guidelines for Academic Audit:

Summary of Academic Audit Parameters and Weightages

Sr. No.	Parameter	Marks	Weightage	Net marks
1	Teaching, Learning & Resources (TLR)	100	0.30	30
2	Research and Professional Practice (RP)	100	0.30	30
3	Graduation Outcomes (GO)	100	0.20	20
4	Outreach Activities (OA)	100	0.10	10
5	Accreditation Related Activities (ARA)	100	0.10	10
Total Academic Audit Score				100

S.No.	Parameters	Marks
1.	**Teaching, Learning & Resources (TLR) Weight: 0.30**	**100**
	Student Strength (SS): 20 marks Faculty Student Ratio (FSR): 30 marks Faculty Qualification Index (FQI): 20 marks Financial Resource Utilization (FRU): 30 marks	
2.	**Research and Professional Practice (RP)** **Weight: 0.30**	**100**
	Publications (PU): 35 marks Quality of Publications (QP): 40 marks IPR and Patents: Published and Granted (IPR): 15 marks Footprint of Projects and Professional Practice (FPPP): 10 marks	
3.	**Graduation Outcomes (GO)** **Weight: 0.20**	**100**
	Placement and Higher Studies (GPH): 50 marks University Examinations (GUE): 25 marks Number of Ph.D. Students Enrolled and Graduated (GPHD): 25 marks	
4.	**Outreach Activities (OA)** **Weight: 0.10**	**100**
	As per various Outreach Activities undertaken by Department	
5.	**Accreditation Related Activities (ARA)** **Weight: 0.10**	**100**
	As per various Accreditation Related Activities undertaken by Department	

1.Teaching, Learning & Resources (TLR): 100 marks
Weight: 0.30
Overall Assessment Metric:

TLR = SS (20) + FSR (30) + FQI (20) + FRU (30)
Component metrics based on:

Student Strength: SS
Faculty-Student Ratio: FSR
Faculty with PhD: FQI
Financial Resource Utilization: FRU

1.A. Student Strength (SS): 20 Marks

SS = [No. of students enrolled / Sanctioned Intake] x 100

SS	Marks
>= 90%	20
80% to 89.99%	17
70% to 79.99%	14
60% to 69.99%	11
50% to 59.99%	08
40% to 49.99%	05
Less than 40%	00

1.B. Faculty-Student Ratio (FSR): 30 marks

- **FSR = N/F**
- ***N = No. of students (UG + PG) in previous Academic Year***

- F: Faculty (who have taught at least 2 semesters) in the institution in the previous academic year. *Faculty on contract basis/ad-hoc basis will be considered if the concerned faculty has taught in both the semesters of previous Academic Year*
- FSR

FSR	Marks
Less than 15	30
15.01 to 16.99	26
17.00 to 18.99	22
19.00 to 20.99	18
21.00 to 22.99	14
23.00 to 25.00	10
Greater than 25.00	00

1.C. Faculty Qualification Index (FQI): 20 marks

Faculty qualification index (FQI) = 2 * [(10X +4Y)/F)]

X=No. of faculty members with Ph.D. degree or equivalent as per AICTE/UGC norms.

Y=No. of faculty members with M. Tech. or ME degree or equivalent as per AICTE/UGC norms.

F=Total No. of faculty

1.D: Financial Resources and their Utilisation (FRU): 30 Marks

- **FRU = [Amount of allocated budget utilized / Budget allocated] x 100**

FRU (%)	Marks
>= 90%	30
80% to 89.99%	27
70% to 79.99%	24
60% to 69.99%	21
50% to 59.99%	18
40% to 49.99%	15
Less than 40%	00

2. Research and Professional Practice (RP): 100 marks

- **Weight: 0.30**
- **Overall Assessment Metric:**

For Architecture, Management, HSS, CQEDS, Maths, RS:

RP = PU (40) + QP (40) + FPPP (20)

For Other Departments:

RP = PU (35) + QP (40) + IPR (15) + FPPP (10)

- **The component metrics:**

A. Total Publications: PU

B. Quality of Publications: QP

C. IPR and Patents: Patents Published and Granted: IPR

D. Footprint of Projects and Professional Practice: FPPP

2.A. Publications (PU): 35 marks / 40 marks (for Arch, HSS, CQEDS, Mgmt, Maths, RS)

- **PU = Total Unique Publications made by the department (P) / No. of Faculty (F)**

If PU is:

For other Departments	For Architecture, Management, HSS, CQEDS, Mathematics, Remote Sensing
>= 3.0 – 35 marks	>= 3.0 – 40 marks
2.5 – 3.0 – 30 marks	2.5 – 3.0 – 35 marks
2.0 – 2.5 – 25 marks	2.0 – 2.5 – 30 marks
1.5 – 2.0 - 20 marks	1.5 – 2.0 - 25 marks
1.0 – 1.5 – 15 marks	1.0 – 1.5 – 20 marks
0.5 – 1.0 – 10 marks	0.5 – 1.0 – 15 marks
Less than 0.5 – 0 marks	Less than 0.5 – 0 marks

2.B. Combined metric for Quality of Publications (QP): 40 Marks (for all)

QP = [Publications in SCI/SCIE (R) / Total unique Publications (P)] x 100

100% - 40 marks
80% - 90% - 38 marks
70% - 80% - 36 marks
60% - 70% - 32 marks
50% - 60% - 30 marks
40% - 50% - 28 marks
30% - 40% - 26 marks
20% to 30% - 24 marks
10% to 20% - 22 marks
less than 10% - 20 marks

2.C. IPR and Patents: Patents Published and Granted (IPR): 15 marks
(metric not applicable to Architecture, Management, HSS, CQEDS, Maths, RS)

- **IPR = [2 x Granted Patents (G) + Published Patents (P)] / No. of Faculty (F)**

IPR ≥ 0.5 – 15 marks
0.4 ≤ IPR < 0.5 – 12 marks
0.3 ≤ IPR < 0.4 – 9 marks
0.2 ≤ IPR < 0.3 – 6 marks
0.1 ≤ IPR < 0.2 – 3 marks
IPR < 0.1 – 0 marks

2.D. Footprint of Projects and Professional Practice (FPPP): 10 marks / 20 marks (for Arch, HSS, CQEDS, Management and Mathematics)

- **FPPP = (SPR + C + CSR + FDP + WS) / F**

If FPPP is:

For other Departments	For Architecture, Management, HSS, CQEDS, Mathematics, Remote Sensing
> 5 lakhs – 10 marks	> 5 lakhs – 20 marks
4 to 5 lakhs – 8 marks	4 to 5 lakhs –18 marks
3 to 4 lakhs – 6 marks	3 to 4 lakhs – 16 marks
2 to 3 lakhs – 4 marks	2 to 3 lakhs – 14 marks
1 to 2 lakhs – 2 marks	1 to 2 lakhs – 12 marks
Less than 1 lakh – 0 marks	Less than 1 lakh – 0 marks

3. Graduation Outcome (GO):100 marks

a. Weight: 0.20

b. Overall Assessment Metric:

c. **GO = GPH (50) + GUE (25) + GPHD (25)**

The component metrics are explained on the following pages:

A. Placement and Higher Studies: GPH

B. Metric for University Examinations: GUE

C. Metric for Number of Ph.D. Students Enrolled and Graduated: GPHD

3.A. Metric for Placement and Higher Studies (GPH): 50 marks

- **GPH = 50 x [(Np / 100)+(Nhs / 100)]**

Np = (No. of Students Placed / No. of Students Graduated) x 100

Nhs = (No. of Students opted for Higher Studies / No. of Students Graduated) x 100

3.B. Metric for University Examinations (GUE): 15 Marks

- **GUE = 25 × min [(N_g/80), 1]**
- Ng = (No. of students graduated / No. of students enrolled in final year) x 100

3.C. Metric for Number of Ph.D Students Enrolled and Graduated (GPHD): 25 Marks

GPHD = (N1/F) + (N2/F) [N1 = No. of PhD Students Enrolled; N2 = No. of PhD Students Graduated

If (N1/F) is:	If (N2/F) is:
>3 – 10 marks	>1.0 – 15 marks
2 to 3 – 8 marks	0.8 to 1.0 – 8 marks
1 to 2 – 6 marks	0.6 to 0.8 – 6 marks
Between 0 to 1 – 4 marks	0.4 to 0.6 – 4 marks
No scholar – 0 marks	0.2 to 0.4 – 3 marks
	< 0.2 – 0 marks

Data to be collected:

	Previous Academic Year
No. of PhD Students Enrolled (N1)	
No. of PhD Students Graduated (N2)	

4. Outreach Activities (OA): 100 marks

Weight: 0.10

Overall Assessment Metric has the following components:

a. Conferences / Workshops / Seminars etc. organized by the Department
b. Faculty members visited abroad
c. Faculty members attended Conferences, Workshops, FDPs, MDPs, Short Term Training Programs etc. within India
d. MoUs (all active MoUs with Activity Reports)
e. Awards/Recognitions received by faculty
f. Faculty delivered Invited Talks

Number of Outreach activities	Marks
All 6	100
Only 5	80
Only 4	60
Only 3	40
Only 2	20
Less than 2	00

5. Accreditation Related Activities (ARA): 100 marks

Weight: 0.10

Overall Assessment Metric has the following components:

a. Departmental Societies and Club Activities
b. Professors of Practice and Chair Professors
c. New courses introduced
d. Implementation of Feedback Analysis and Action Taken Report
e. Implementation of Mentor-Mentee System
f. Implementation of OBE in all programs (applicable to programs eligible for NBA)
g. Books and book chapters published by the department

Number of Outreach activities	**Marks**
All 7	100
Only 6	80
Only 5	60
Only 4	40
Only 3	20
2 or less	00

Data to be collected:

Accreditation Related Activities (Part A)	**Count (A.Y. 2023-24)**
Number of Departmental Societies and Club Activities	
Number of Professors of Practice and Chair Professors	
Number of New courses introduced	
Number of books and book chapters published by the department	
Accreditation Related Activities (Part B)	**Y/N**
Implementation of Feedback Analysis and Action Taken Report	
Implementation of Mentor-Mentee System	
Implementation of OBE in all programs (applicable to programs eligible for NBA)	

8.3 Improvement in Faculty Qualification/Contribution (15)

(Assessment is based on improvement in qualification and publications with respect to the Department)

Academic Performance	CAYm1 (2024-25)	CAYm2 (2023-24)	CAYm3 (2022-23)	CAYm4 (2021-22)
No. of faculty members with Ph.D. degree	23.00	21.00	17.00	22.00
No. of publications in peer reviewed journals	71.00	47.00	40.00	35.00
No. of publications in conferences	0.00	2.00	1.00	1.00

8.4 Improvement in Academic Performance (10)

(Provide details of improvement in academic performance of 1st year, 2nd year, 3rd year students during the assessment period.)

Academic Performance	CAYm1 (2024-25)	CAYm2 (2023-24)	CAYm3 (2022-23)	CAYm4 (2021-22)
Academic Performance Index (API) of the First-Year Students in the Program (Refer to section 4.3)	7.01	7.22	6.42	7.93
Academic Performance Index (API) of the Second-Year Students in the Program (Refer to section 4.4)	7.33	6.58	7.44	8.40
Academic Performance Index (API) of the Third-Year Students in the Program (Refer to section 4.5)	6.83	7.56	8.22	8.37

9. STUDENT SUPPORT AND GOVERNANCE (120) Total Marks (120)

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

(Data for first year courses to calculate the FYSFR)

Please provide First year faculty information considering load

Name of the faculty member	PAN No.	Qualification	From Engineering Courses	Date of Receiving Highest Degree	Area of Specialization	Designation	Date of joining	Currently Associated (Yes /No)	Nature Of Association (Regular / Contract)	Date Of leaving (In case Currently Associated
Dr. Anjana Dwivedi	ARJPD0115D	PhD	No	11-03-2014	Bioengineering and Biotechnology	Assistant Professor	01-04-2008		Regular	No
Dr. Hare Ram Singh	BLHPS5057E	PhD	No	11-05-1999	Bioengineering and Biotechnology	Assistant Professor	01-10-2007		Regular	No
Dr. Shubha Rani Sharma	CFQPS2914Q	PhD	No	10-03-2010	Bioengineering and Biotechnology	Assistant Professor	02-01-2010		Regular	No
Dr. Yogender Aggarwal	ALKPA0856F	PhD	No	23-01-2012	Bioengineering and Biotechnology	Assistant Professor	01-06-2007		Regular	No
Dr. Anirban Pradhan	AYRPP3968M	PhD	No	23-09-2013	Chemistry	Assistant Professor	23-09-2021		Regular	No
Dr. Atul Kumar	CLSPK4989F	PhD	No	06-08-2020	Chemistry	Assistant Professor	06-09-2021		Regular	No
Dr. Barnali Dasgupta Ghosh	BDVPD4539E	PhD	No	16-05-2011	Chemistry	Assistant Professor	11-01-2012		Regular	No
Dr. Debdutta Chakraborty	APDPC3197C	PhD	No	20-07-2018	Chemistry	Assistant Professor	01-10-2021		Regular	No
Dr. Deep Shikha	CHXPS5382P	PhD	No	01-10-2009	Chemistry	Associate Professor	01-08-2008		Regular	No
Dr. Gautam Sen	BLSPS7748M	PhD	No	15-02-2011	Chemistry	Assistant Professor	01-08-2009		Regular	No
Dr. Joydeep Dhar	CHAPD6091F	PhD	No	20-06-2015	Chemistry	Assistant Professor	25-08-2021		Regular	No
Dr. Pradip Kar	BLHPK2023E	PhD	No	30-12-2009	Chemistry	Associate Professor	01-08-2009		Regular	No
Dr. Subhendu Naskar	AJYPN1406G	PhD	No	18-04-2006	Chemistry	Professor	10-08-2009		Regular	No
Dr. Susanta Sinha Mahapatra	AQFPM4922N	PhD	No	27-01-2010	Chemistry	Assistant Professor	18-08-2009		Regular	No
Dr. Neeta Kumari	AQZPK3463C	PhD	No	10-01-2018	Civil Engineering	Assistant Professor	12-08-2008		Regular	No
Dr. Radhakrishnan Naresh Kumar	AQBPN6595N	PhD	No	14-12-2007	Civil Engineering	Associate Professor	04-05-2012		Regular	No
Dr. Sukalyan Chakraborty	AGPPC4830R	PhD	No	01-06-2006	Civil Engineering	Associate Professor	16-07-2012		Regular	No
Dr. Tanushree Bhattacharya	ANMPB3222C	PhD	No	30-06-2007	Civil Engineering	Associate Professor	14-09-2012		Regular	No
Dr. Jayasree Sengupta	FUKPS7129P	PhD	Yes	14-12-2022	Computer Science and Engineering	Assistant Professor	15-04-2024		Regular	No

Dr. Kishore Kumar Senapati	AOLPS5712E	PhD	Yes	26-11-2014	Computer Science and Engineering	Associate Professor	13-07-2005		Regular	No
Dr. Ravi Shankar Mehta	ARZPM4094L	PhD	Yes	13-01-2024	Computer Science and Engineering	Assistant Professor	19-12-2024		Regular	No
Dr. Satya Prakash Singh	ARLPS8625H	PhD	Yes	29-06-2012	Computer Science and Engineering	Assistant Professor	17-08-2001		Regular	No
Dr. Debomita Ghosh	ARDPG0858N	PhD	Yes	21-08-2014	Electrical and Electronics Engineering	Associate Professor	08-07-2008		Regular	No
Dr. Gauri Shanker Gupta	AFPPG5502B	PhD	Yes	23-10-2019	Electrical and Electronics Engineering	Assistant Professor	08-06-2008		Regular	No
Dr. Prateem Pan	BVAPP1910Q	PhD	Yes	24-12-2023	Electrical and Electronics Engineering	Assistant Professor	18-12-2024		Regular	No
Dr. Sanjeev Kumar	BOFPK5035P	PhD	Yes	02-07-2021	Electrical and Electronics Engineering	Assistant Professor	12-11-2024		Regular	No
Dr. Sourabh Paitandi	BPLPP2623D	PhD	Yes	05-07-2021	Electrical and Electronics Engineering	Assistant Professor	24-05-2024		Regular	No
Dr. Sushma Suryaprakash Kamlu	BAKPK8690M	PhD	Yes	21-10-2019	Electrical and Electronics Engineering	Assistant Professor	05-07-2007		Regular	No
Mr. Brij Mohan Prasad	AXRPP2405J	ME	Yes	26-03-2010	Electrical and Electronics Engineering	Assistant Professor	02-01-2008		Regular	No
Dr. Anusha Vupputuri	BDFPA5794N	PhD	Yes	06-12-2025	Electronics and Communication Engineering	Assistant Professor	07-06-2024		Regular	No
Dr. Dileep Kumar Upadhyay	ABPPU4756P	PhD	Yes	06-03-2014	Electronics and Communication Engineering	Assistant Professor	25-08-2007		Regular	No
Dr. Md Afaque Azam	BRYPA9635D	PhD	Yes	24-12-2022	Electronics and Communication Engineering	Assistant Professor	09-05-2024		Regular	No
Dr. Megha Dadel	AVSPD4964H	PhD	Yes	15-05-2015	Electronics and Communication Engineering	Assistant Professor	08-06-2009		Regular	No
Dr. Prajna Parimita Dash	AQAPD9807C	PhD	Yes	20-10-2017	Electronics and Communication Engineering	Assistant Professor	31-07-2012		Regular	No
Dr. Richa Mishra	ALNPM6893M	PhD	Yes	19-08-2019	Electronics and Communication Engineering	Assistant Professor	15-09-2021		Regular	No
Dr. Sandeep Mukherjee	AQIPM0023F	PhD	Yes	27-02-2014	Electronics and Communication Engineering	Assistant Professor	18-03-2024		Regular	No
Dr. Sanjeet Kumar	AKYPK8246Q	PhD	Yes	26-09-2013	Electronics and Communication Engineering	Assistant Professor	14-07-2003		Regular	No
Dr. Vishal H Shah	AYKPS1947E	MTech	Yes	30-07-2004	Electronics and Communication Engineering	Assistant Professor	30-10-2006		Regular	No
Dr. Ananya Saha	DIEPS1968C	PhD	No	14-09-2022	Humanities and Social Sciences	Assistant Professor	11-03-2024		Regular	No
Dr. Rohit Kumar Pandey	ADBPP6497N	MA	No	17-05-2008	Humanities and Social Sciences	Assistant Professor	18-08-2008		Regular	No
Mr. Mrinal Kumar Pathak	BSSPP2983A	MFA	No	06-08-1999	Humanities and Social Sciences	Assistant Professor	02-01-2002		Regular	No
Dr. Amrita Mandal	BHVPM5245C	PhD	No	25-12-2022	Mathematics	Assistant Professor	29-01-2024		Regular	No
Dr. Anindita Bera	ASMPB0793R	PhD	No	03-09-2019	Mathematics	Assistant Professor	01-02-2024		Regular	No
Dr. Ayan Chanda	BLXPC1872K	PhD	No	27-08-2021	Mathematics	Assistant Professor	13-02-2024		Regular	No
Dr. Pawan Kumar Shaw	DFAPS6145Q	PhD	No	08-05-2023	Mathematics	Assistant Professor	23-01-2024		Regular	No
Dr. Payel Das	AUUPD5155F	PhD	No	31-07-2016	Mathematics	Assistant Professor	20-03-2023		Regular	No
Dr. Prabal Datta	AGGPD1518G	PhD	No	12-03-2007	Mathematics	Assistant Professor	16-08-2002		Regular	No
Dr. Randhir Singh	FZRPS1459A	PhD	No	14-07-2014	Mathematics	Assistant Professor	02-03-2015		Regular	No

Dr. Seshadev Padhi	ATKPP2696J	PhD	No	03-05-2004	Mathematics	Professor	07-01-2004		Regular	No
Dr. Syeda Darakhshan Jabeen	ANOPJ0795N	PhD	No	11-10-2010	Mathematics	Assistant Professor	01-04-2015		Regular	No
Dr. Abhijit Nag	APNPN3186L	PhD	Yes	28-12-1978	Mechanical Engineering	Assistant Professor	02-01-2012		Regular	No
Dr. Arkadeb Mukhopadhyay	BFIPM3411H	PhD	Yes	24-12-2018	Mechanical Engineering	Assistant Professor	14-08-2019		Regular	No
Dr. Arun Kumar Kadian	CFYPK3816F	PhD	Yes	21-12-2018	Mechanical Engineering	Assistant Professor	24-07-2019		Regular	No
Dr. Faisal Rahmani	ALZPR7678D	PhD	Yes	03-11-2018	Mechanical Engineering	Assistant Professor	09-11-2021		Regular	No
Dr. Mukesh Sharma	DAJPS3701L	PhD	Yes	06-10-2018	Mechanical Engineering	Assistant Professor	16-08-2019		Regular	No
Dr. Nirmal Kumar	DYTPK2518B	PhD	Yes	09-07-2016	Mechanical Engineering	Assistant Professor	08-06-2015		Regular	No
Dr. Om Prakash	ATMPP7524P	PhD	Yes	06-05-2015	Mechanical Engineering	Assistant Professor	26-03-2015		Regular	No
Dr. Paritosh Mahata	AUVPM8546L	PhD	Yes	16-06-2017	Mechanical Engineering	Assistant Professor	11-07-2016		Regular	No
Dr. Praveen James Sanga	BMCPS0499G	PhD	Yes	26-06-2024	Mechanical Engineering	Assistant Professor	09-07-2007		Regular	No
Dr. Rajeev Kumar	AISPK4011H	PhD	Yes	11-09-2008	Mechanical Engineering	Associate Professor	01-07-2002		Regular	No
Dr. Saurav Chakraborty	AWXPC6978N	PhD	Yes	02-11-2019	Mechanical Engineering	Assistant Professor	31-07-2021		Regular	No
Dr. Sujeet Kumar Mishra	AIJPM8211E	PhD	Yes	06-02-2019	Mechanical Engineering	Assistant Professor	13-12-2005		Regular	No
Dr. Sushanta Ghuku	BWEPG5848P	PhD	Yes	26-07-2022	Mechanical Engineering	Assistant Professor	01-03-2023		Regular	No
Dr. Sushil Kumar Dhiman	AKDPD7812L	PhD	Yes	18-05-2018	Mechanical Engineering	Assistant Professor	05-07-2007		Regular	No
Dr. Anupam Roy	CDPPR8321H	PhD	No	12-12-2011	Physics	Assistant Professor	29-10-2021		Regular	No
Dr. Dilip Kumar Singh	AXKPS4249L	PhD	No	13-03-2011	Physics	Assistant Professor	13-06-2017		Regular	No
Dr. Madhu Priya	BWCPP1699H	PhD	No	17-04-2012	Physics	Assistant Professor	24-05-2017		Regular	No
Dr. Nishi Srivastava	BCUPS1702E	PhD	No	16-12-2011	Physics	Assistant Professor	01-08-2012		Regular	No
Dr. Rajeev Kumar	AJFPK9829F	PhD	No	29-04-2005	Physics	Assistant Professor	01-12-2005		Regular	No
Dr. Rajeev Kumar Sinha	DMLPS0975L	PhD	No	13-11-2007	Physics	Associate Professor	16-04-2023		Regular	No
Dr. Rajyavardhan Ray	AWUPR3318N	PhD	No	05-07-2013	Physics	Assistant Professor	13-12-2021		Regular	No
Dr. Rishi Sharma	BYSPS8065A	PhD	No	14-05-2012	Physics	Assistant Professor	01-04-2008		Regular	No
Dr. Sourabh Lahiri	AGZPL9509L	PhD	No	30-08-2013	Physics	Assistant Professor	12-06-2017		Regular	No
Dr. Prashant Prakash	BKMPP5668L	PhD	Yes	08-07-2019	Production and Industrial Engineering	Assistant Professor	16-07-2010		Regular	No
Dr. Randhir Kumar	BBZPK3416P	PhD	Yes	10-05-2014	Production and Industrial Engineering	Assistant Professor	27-09-2012		Regular	No
Dr. Sanjiv Kumar Tiwari	AJUPT9071D	PhD	Yes	30-04-2019	Production and Industrial Engineering	Assistant Professor	18-09-2012		Regular	No
Dr. Suman Samanta	BOCPS9764L	PhD	Yes	28-06-2018	Production and Industrial Engineering	Assistant Professor	14-09-2021		Regular	No
Dr. Thakur Abhinav Amar	AMIPA2431M	PhD	Yes	28-12-2024	Production and Industrial Engineering	Assistant Professor	16-08-2010		Contract	No
Dr. Vinay Sharma	AKXPS7830B	PhD	Yes	07-08-2006	Production and Industrial Engineering	Professor	26-02-1999		Regular	No
Dr. Partha Mondal	AUCPM7152M	PhD	Yes	27-09-2014	Space Engineering and Rocketry	Assistant Professor	04-02-2015		Regular	No
Dr. Priyank Kumar	ASKPK8049D	PhD	Yes	09-11-2016	Space Engineering and Rocketry	Associate Professor	03-12-2007		Regular	No

Table No. 9.1.1: FYSFR details

Year	Sanctioned intake of all UG programs (S4)	No. of required faculty (RF4=S4/20)	No. of faculty members in Basic Science Courses & Humanities and Social Sciences including Management courses (NS1)	No. of faculty members in Engineering Science Courses (NS2)	Percentage= No. of members (NS1*0.8) +(NS2*0.2)) / (No. of required faculty (RF4)); Percent ((NS1*0.8) +(NS2*0.2))
2023-24(CAYm2)	930	46	47	81	117
2024-25(CAYm1)	930	46	52	87	128
2025-26 (CAY)	960	48	54	60	115

Note:

Ex: If S4=240, the Institute needs a minimum of 2 faculty members in Physics, 2 in Chemistry, and 4 in Mathematics.

Ex: If S4=420, the Institute needs a minimum of 4 faculty members in Physics, 4 in Chemistry, and 5 in Mathematics.

Ex: If S4=720, the Institute needs a minimum of 6 faculty members in Physics, 6 in Chemistry, and 8 in Mathematics.

For intake(S4) is more than 720, an FYSFR of 1:20 shall be maintained approximately.

≥ 90% of faculty members; 05 marks.
≥ 80% to < 90 of faculty members; 04 marks.
≥ 70% to < 80 of faculty members; 03 marks.
≥ 60% to < 70 of faculty members; 02 marks.
≥ 50% to < 60 of faculty members; 01 mark.
< 50% of faculty members; 00 mark.

9.2 Mentoring system (5 marks)

(Type of mentoring: Professional guidance/career advancement/course work specific/ laboratory specific/all-round development. Number of faculty mentors: Number of students per mentor: Frequency of meeting:

The institution should report the details of the mentoring system, its implementation and effectiveness through impact studies, services both online and physical, and the mentoring of seniors (final year students) to juniors (freshmen) if any, etc.).

The Institute has a Standard Operating Procedure (SoP) for Mentor Mentee Interaction System, which establishes a structured mentoring framework. The system aims to provide comprehensive guidance for students' academic and personal development. Faculty members serve as mentors to assigned mentees throughout their academic tenure, with meetings required at least twice per semester.
Mentors responsibilities include academic advising, career planning assistance, personal guidance, monitoring academic performance, and parent communication. Mentees must actively participate in meetings, honestly discuss challenges, respect scheduled meetings, and implement feedback.
The process includes formal mentor assignments, initial rapport-building meetings, regular interactions with documented agenda items, and comprehensive record-keeping through standardized forms. The program includes a feedback mechanism where mentees evaluate the mentorship experience each semester, and conflicts can be addressed through department heads with possible reassignments.

9.3 Feedback Analysis (10 marks)

9.3.1 Feedback on Teaching and Learning Process and Corrective Measures Taken, if any (5 marks)

(Provide details of the feedback collection process on TLP, average percentage of students who participate; Specify the feedback analysis process; Basis of reward/ corrective measures during the assessment period. Specify the number of corrective measures taken. Exhibit the details of analysis done.)

The institute follows a structured SOP to collect and act on student feedback each semester.
Feedback is gathered through ERP, analysed question-wise, and deviations from average scores are identified.
Courses with negative deviations (more than –20%) trigger corrective measures through meetings with concerned faculty/students, while positive deviations (+10%) are acknowledged and best practices shared.
If an entire batch's feedback falls below 60%, special meetings and action plans are initiated.
Each department prepares a **Feedback Analysis and Action Taken Report (FAATR)**, documenting feedback trends, corrective measures, and appreciations. This is presented in faculty meetings and submitted to IQAC within three weeks. Continuous review ensures ongoing improvement.

9.3.2 Feedback on Academic Facilities (5 marks)

(Provide details of the feedback collection process on facilities, its analysis and corrective actions taken during the assessment period.)

As part of our continuous quality improvement process at Birla Institute of Technology, Mesra, we have established a robust feedback mechanism to evaluate academic facilities and implement necessary enhancements. The following details our feedback collection process, analysis methodology, and subsequent corrective actions during the assessment period:
Feedback Collection Process on Facilities
Our Institution has implemented a structured feedback system administered by the Internal Quality Assurance Cell (IQAC). Feedback is collected from graduating students through an online questionnaire. The feedback instrument utilizes a 4-point Likert Scale (Excellent, Good, Average, Poor) covering various parameters such as Classrooms and academic facilities, hostel, canteen, campus and environment, computer and internet facilities, library, etc.

Analysis Methodology
The analysis follows a systematic approach:
- Analysing distribution of feedback across the scale (Excellent to Poor)
- Generating visual representations through charts for data interpretation
- Identifying strengths and improvement areas based on response distribution
The feedback analysis report is uploaded on the website at: https://conference.bitmesra.ac.in/content/iqac/239

9.4 Training and Placement Support (10 marks)

(Provide details of the training and placement supports, calendar of scheduled trainings, career guidance and effectiveness of career guidance, industry interaction exclusively for pre-placement/ internship/placement/counseling and support for higher study etc.)

The Training & Placement Division of the Institute works towards generating a symbiotic association with leading industries. It nurtures contacts with organisations for generating internship as well as campus placement opportunities for the students of the Institute. It also initiates and organises training programmes for the development of skills necessary to face the selection process. A mentorship programme has also been initiated where senior alumni are connected to the students for career guidance.

Details of the training and placement supports:

	2021-22	2022-23	2023-24	2024-25
No. of Offers (All)	934	737	630	771
No. of Offers (B.Tech)	531	522	471	530
Average CTC (Rs Lakhs)	13.03	14.68	12.05	11.82
Maximum CTC (Rs Lakhs)	58.34	51	52	1.44cr
Minimum CTC (Rs Lakhs)	4	3.5	3.3	3
No. Internship Offers	371	312	267	326
No of companies visited	235	197	183	320

Every year we send invitations to approx. 400 to 500 companies for campus recruitment.

Trainings Sessions conducted

- Interpersonal Skill Enhancement Session
  Speaker: Mr. Vineet Barnwal

  Date & Time: 17-18th August, 2024 - 9 AM

- Placement Mentorship Programme:
  An alumni-led mentorship program pairs current students or young professionals with experienced alumni to provide guidance and support for career development and personal

growth. The goal is to connect students with professionals in their desired field, offering valuable insights and networking opportunities

- GD & PI Etiquettes Session by Cambridge
  Speaker: Ms. Ruchi Tomar

  Date & Time: 28th-29th September, 2024, 10 AM

- ETS India - Session on TOEFL & GRE at BIT Mesra
  Date & Time: 9th Jan'25 from 5.30pm-6.30pm



- Alumni-Led Mentorship Program (Skill Turtle): The session was on a 6-month mentorship program designed to help you ace your placements and internships. This program, led by our alumni and founder of Skill Turtle, offers a comprehensive approach to preparing for the competitive job market. The session was conducted by BIT Mesra alumni from CSE : Siddhant Jain (CRED), Shivam Kumar (Cisco), Priyanshu Deep (NPCI), and Harshavardhan Sinha (Wisetech).
  Date: 5th April, 2025 | 9:30 AM - 11 AM

- Training Session on Public Speaking, GD & PI for MBA students
  Speaker: Capt. Purba Panchbhai

  Date: 17th -24th January, 2025

- Placement Training Session
  Trainer from B Factory

  Date: 9th to 19th April 2025





- Placement Training Session
  Trainer from IMS

  Date: 5th to 20th April 2025

Sessions on Career guidance:

Industry interaction exclusively for pre-placement/ internship/placement/counseling:

- Trailblazers' Talk Leadership Insights and Experience sharing session
  Speaker: Mr. Uttam Singh, Vice President of Iron Making at Tata Steel

  Date & Time: 8th October, 2023 6:30 PM
- Trailblazers' Talk Leadership Insights and Experience sharing session
  Speaker: Mr Peeyush Gupta, Vice President GSP and Supply Chain at Tata Steel

  Date & Time: 31st October, 2023 6:30 PM
- Trailblazers' Talk Leadership Insights and Experience sharing session
  Speaker: Jaya Singh Panda, Chief L&D & Chief Diversity Officer at Tata Steel.

  Date & Time: 9th November, 2023 6:30 PM
- Trailblazers' Talk Leadership Insights and Experience sharing session
  Speaker: Mr Hemant Gupta, Head, Tata Steel Adventure Foundation (TSAF)

  Date & Time: 31st January, 2024 6:30 PM
- Trailblazers' Talk - Decoding Salary Structures
  Speaker: Mr. Pritam Roy Choudhury, Head HRM Rewards, Tata Steel

  Date & Time: 31st January, 2025 6:30 PM
- ISB's Young Leaders Programme (YLP) Counselling and Mentoring session
  Date & Timings: 13 February 2024, 5:30 PM onwards
- Deloitte Tech Talk
  Date & Time: 8th May, 2023; 11 AM

  Topic: Artificial Intelligence
- WiseTech Global
  Speaker: Director HR

  Date & Time: 21st January, 2024; 2PM

- Vision IAS Talk Session
  Date & Time: 24th January, 2024; 6:30 PM
- Worldquant - Introduction to Quantitative Finance and HFT
  Speaker: Adarsh Kumar

  Date & Time: 8th April, 2024; 6PM
- Broadridge Financial Solutions Campus Interaction
  Speaker: Director, Broadridge

  Date & Time: 7th October, 2024 - 2 PM

  Topic: Databases



- Session with Mr. Sri Srinivasan, MD, Hellman & Friedman
  Date: 8th November, 2024, 1:30 PM

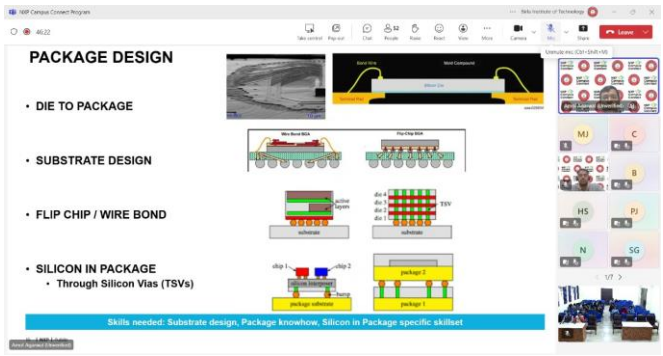


- Career Opportunities in the Department of Atomic Energy through Bhabha Atomic Research Centre (BARC) Training Schools" organized by the Variable Energy Cyclotron Centre (VECC), Kolkata
  Speaker: Shri Suman Guha and Dr. Arindam Sikdar

  Date & Time: Tuesday, 21st January 2025, 5:00 PM
- NXP Campus Connect Program : SoC Design Flow Overview. In this session, NXP India experts will discuss how the SoCs are designed starting from RTL to GDS, their various functions involved in SoC design flow and the importance of each function.

Speaker: Amol Agarwal and Hukum Singh Rathore

Date & Time: Tuesday, 4 February 2025, 5:00 PM

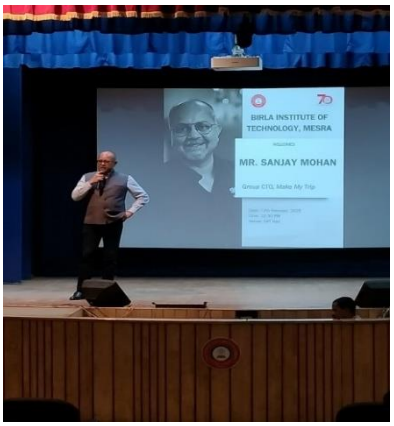






- Mr. Sanjay Mohan, the group CTO of Make My Trip and an alumnus of BIT Mesra; delivered a campus connect talk on 12th February, 2025 in the CAT Hall for the pre-final students of CSE, AI-ML, Maths & Computing and Quantitative Economics & Data Science. He talked about his life journey as well as data decisions at Make My Trip.





- **MSCI Career Day @ BIT Mesra:** In this session, MSCI professionals shared insights into MSCI's business, the career opportunities available for junior talent, and essential tips for interviews. The discussion highlighted the experiences of industry leaders and the dynamic work environment at MSCI.
  Speakers: Bhavana Naik (Executive Director, Data - Technical) and Shemina Salvi (Executive Director, Data - HR)
  Date & Time: Monday, 24 March 2025, 1:00 PM





- TCE Ace Talk: Ms. D Geethalakshmi, General Manager at TCE,
  Topic: Green Transportation – Electric Mobility and Battery Storage Systems

  This session presented an excellent opportunity for engineering students to explore the latest trends and developments in sustainable transportation and energy storage systems.

  Event Details:

  Date: 21st February 2025 | Time: 4:00 PM to 5:00 PM | Platform: Microsoft Teams

- TCE Ace Talk: Mr. Anupam Roy, Senior General Manager at TCE,
  Topic: Renewable Energy & Landscapes

  Event Details:

  Date: 12th December 2024 | Time: 11 AM to 12 PM | Platform: Microsoft Teams

- Tata Power: Campus Engagement Session
  Topic: Renewable Energy Overview & Trends in India

  Speaker: Gaurav Lodha (Group Head - Solutioning & Modelling).

  Event Details:

  Date: 14th April 2025 | Time: 3:00 PM to 4:00 PM | Platform: Microsoft Teams

Few Webinars conducted by our Alumni

Alumni event name	Date conducted	Location	Footfall	Event objective/outcome
Webinar by Prof Aatmesh Shrivastava 'Unveiling the Blueprint: Engineering the Future with Hardware Design for Machine Learning Systems'	2/09/23, 16/09/23, 3009/23 & 14/10/23	Online	20	Webinar Series
Nikhil Verma (1996-2000 CSE) delivered a webinar on “Evolving to a Decentralized Autonomous system"	18/02/23	Online	25	Webinar

Mr Rajesh Sharma (1985 – 1989 CSE Graduate from BIT Mesra) delivered a webinar on 'Demystifying Artificial	18/03/23	Online	30	Webinar
Prof. Aatmesh Shrivastava (2002 - 2006) Unveiling the Blueprint: Engineering the Future with Hardware Design for Machine Learning Systems	02-09-2023	Online	35	Webinar
Prof. Aatmesh Shrivastava (2002 - 2006) Unveiling the Blueprint: Engineering the Future with Hardware Design for Machine Learning Systems	16-09-2023	Online	37	Webinar
Prof. Aatmesh Shrivastava (2002 - 2006) Unveiling the Blueprint: Engineering the Future with Hardware Design for Machine Learning Systems	30-09-2023	Online	24	Webinar
Prof. Aatmesh Shrivastava (2002 - 2006) Unveiling the Blueprint: Engineering the Future with Hardware Design for Machine Learning Systems	14-10-2023	Online	21	Webinar
Mr. Raweesh Chaudhary (1988-1992), Digital Transformation	22-02-2025	Online	65	Webinar

Support for higher study etc:

We are in the process of initiating this activity….

9.5 Start-up and Entrepreneurship Activities (5 marks)

(Describe the initiatives, facilities created/utilization and their effectiveness in encouraging students for innovation, entrepreneurship, incubation and start-up. Also provide the list of beneficiaries.)

Institution's Innovation Council BIT Mesra has been established on October 2018 onwards under the Ministry of Education (MoE) and Innovation Cell, New Delhi which has been consistently made the requisite efforts to thrust the innovation and start-up ecosystem amongst the students of BIT Mesra and their off campuses. A separate deanship has been created for Dean, Research, Innovation and Entrepreneurship, R&D Cell BIT Mesra. The Research and Development Cell under the Dean of Research, Innovation, and Entrepreneurship (DRIE) has been promoting and funding diverse innovation related activities for BIT students.

As per Ministry of Education (MoE) mandatory requirement, every HEI is required to have National Innovation and Start-up Policy (NISP) for promoting student driven innovations & start-ups and to engage the students and faculty in innovation and start up activities in campus. In order to implement this requirement, BIT has created two policies: (a) Innovation, Incubation & Pre-incubation and Entrepreneurship development policy, (b) Start-up policy. These policies aim to build, streamline and strengthen the innovation and entrepreneurial ecosystem in campus and will be instrumental in leveraging the potential of student's creativity, problem solving and entrepreneurial mind-set, and promoting a strong intra- and inter-institutional partnerships with ecosystem enablers and different stakeholders at regional, national and international level.

The Entrepreneurship Development Cell (EDC) under the R&D Cell BIT Mesra hosts the annual Entrepreneurship-Summit, or E-Summit, every year to promote entrepreneurial thinking among

college students and provide aspiring start-ups a platform. A variety of year-round events, including talks by well-known business figures and seminars on entrepreneurship, fundraising, and other pertinent topics, are planned in addition to the E-Summit.

The following Innovation Activities are organized under Institution's Innovation Council BIT Mesra Entrepreneurship Development Cell.

- **Business Plan Competition**

  The Institution's Innovation Council (IIC-BIT Mesra as per MoE) organizes a "Business Plan Competition" every year in the months of August and September. This business plan competition aims to identify the innovative entrepreneurial bent of mind of BIT students in different domains of business and allied disciplines where they present their business idea plans. In this event students will showcase their innovative business plan idea and present their idea in front of Jury members. The Business plan event is a Pre-Qualifier event of BIT -NISHAN -an innovation contest. In this business plan competition students will get financial support of Rs 10,000 for up to 15- 20 teams for initial market survey expenses and to make a prototype product and demonstrate their innovation product in the final round of BIT NISHAN Final Innovation Contest.

- **BIT NISHAN -Innovation Contest**

  BIT NISHAN is an annual flagship Innovation Contest where NISHAN stands for ***Neoteric-Indigenous-Scientific-Harmonious-Ambitious-Novel***. BIT-NISHAN aims to identify potential startup-idea and to ensure that no idea from BIT with the potential to excel shall go unnoticed and untested due to lack of opportunity, resources and capital. BIT NISHAN event will help to promote the culture of entrepreneurship and innovation amongst students and faculty in BIT. This event major goal is to draw angel investors while also encouraging innovation and entrepreneurship among students from other underfunded colleges in Jharkhand. Students who participate in this innovation competition will get Rs. 1 lakh (One Lakhs) funding to help them create their innovative product and register their new start-up company for implementation and commercialization for their product.

- **"ENIGMA"**

  Enigma it's a National Technical Case Study Competition every year in the month of January which provides a platform to the students to showcase their strategic, technical and business acumen.

- **E-Summit**

  The E-Summit (i.e., Entrepreneurship-Summit) is organized by the EDC under the Dean Research, Innovation and Entrepreneurship R&D Cell BIT Mesra Ranchi to organize the various activities every year to encourage entrepreneurial thinking in the college, through its events, and provide a stage to the budding start-up(s). A variety of year-round events, including talks by well-known business figures and seminars on entrepreneurship, fundraising, and other pertinent topics, are planned in addition to the E-Summit.

- **Intellectual Property Rights Cell**

  BIT has established a dedicated Intellectual Property Rights Cell to promote patenting activities amidst students and faculty. This cell organizes training, workshops, brain storming discussions, interaction with Patent Attorneys on regular basis in the campus. A dedicated funding support is

also provided for registration and processing of patent applications from faculty and students, throughout the year.

Many innovation-related events are funded by Institution's Innovation Council, BIT Mesra and all events are scheduled on a quarterly basis in accordance with the Ministry of Education's (MoE) Innovation Cell mandate in New Delhi. Details of events are mentioned below.

Category	**2023-24**	**2024 -2025**	**2025-2026** **1st Sep 2025– 13th Dec 2025**
Seminars & Workshops	33	38	11
Innovation Event/ National Level Celebration Activities/ Research Innovation Activities	35	43	12
Total	**68**	**81**	**23**

Total Start-up Supported 2024-2025 with DPIIT Registration & Certificate of Incorporation

Sl No.	**Start-up Company Name**	**Registration Year**
1	Explorify Trips Private Limited	April 2025
2	Jurixone Ai Private Limited	April 2025
3	Lumbni Enthropic Labs Private Limited	April 2025
4	Olinp Technology Private Limited	April 2025
5	Roboticulus Private Limited	April 2025
6	Tokenzameen Technologies Private Limited	April 2025
7	Mentivisor pvt. Ltd.	April 2025
8	Vinaiak Ai Private Limited	April 2025
9	Aditya Anandd Digital Solutions Private Limited	April 2025
10	Squirrels consultant India Pvt. Ltd.	April 2025
11	Vedafy Technologies Private Limited	April 2025
12	Elyvate Technologies Private Limited	August 2025
13	Rookus Ventures LLP	September 2025

Total Start-up Seed Fund Grant from angel Investor- 1 Cr 68 Lakhs (April 2025 to till Date)

Award – Entrepreneurship Development Cell

- BIT Mesra Received the Entrepreneurship Catalyst Award – **SBI College Youth IDEATHON 2025** at IIT Delhi on 5th March 2025.
- Ministry of Education, Institution Innovation Council, & AICTE, New Delhi organized **Regional Meet 7.0** on **25th Nov 2025** at Kolkata in JIS University. During this Regional Meet-7.0, BIT Mesra Received **"Best Innovation Award"** under the 256 Higher Education Institution from eastern zone and around 450 faculty members/ students has participated.

- The **Grand Finale of Smart India Hackathon 2025**, organised by the **Ministry of Education** and **AICTE**, **New Delhi** from 8th to 9th Dec 2025. BIT Mesra Students Teams with two faculty mentors has participated and **won the Grand Finale Smart India Hackathon -2025**. The 36-hour

national hackathon consisted of three rounds, each involving mentorship and rigorous jury evaluation. The team's innovative, impactful, and accessible solution earned them the top position among competing institutions. The team Led by Krrish Rastogi, with team members Daksh Kweera, Pratyasha Palit, Prashun Raj, Adnan Adil, and Ishan Singh, and guided by faculty mentors Dr. Anand Prasad Sinha and Dr. Vishal H. Shah, the team developed an AI-powered centralized platform to solve the critical problem of beneficiary identification and financial inclusion under the GIA component of PM-AJAY, Ministry of Social Justice and Empowerment.

9.6 Governance and Transparency (25 marks)

9.6.1 Availability of the Institutional Strategic Plan and its Effective Implementation and Monitoring (10 marks)

(Provide details of the Institute's strategic plan or Institutional Development Plan (IDP), its approval by the competent authority, and its implementation.)

The Core Values of the Institute based on Vision and Mission were defined and are being strictly followed to maintain excellence, inclusiveness and accountability. The Institute also formulated a short and long-term strategic plan, which was approved by the Board of Governors in its 59th Meeting.

CORE VALUES BASED ON VISION AND MISSION OF THE INSTITUTE

1) Integrity and Excellence: The Institute shall be committed to accomplish academic excellence by maintaining the highest standards in imparting education with honesty and transparency.

2) Respect and Inclusiveness: Institute shall pay highest respect to human values and practice an unbiased approach towards total inclusiveness with emphasis on human diversity irrespective of demography, geography, religion, gender and societal status.

3) Responsibility and accountability: Institute shall be sensitive towards societal and environmental needs, with full responsibility and accountability.

4) Local approach and Global Reach: Institute shall pursue localized approaches which will lead to global outreach through active engagement of faculty, staff and students with challenges faced by local communities to develop solutions with a vision to leave its mark at world level.

Short term plan (3 years)

The Institute shall strive to excel in: 1. State-of-the-art research in all its academic departments

2. Developing high quality human resources

3. Enhancing a culture of innovation to meet the industrial and societal demands

4. Creating and adopting new age curricula and delivery techniques

5. Highest lab certifications and accreditations (e.g. NABL, ISO etc.)

Long term plan (10 years)

1. Ranking Targets:

• To reach top 15 in Engineering category and top 25 in Overall and University level NIRF Rankings 44 • To be in Atal Ranking in Innovation Achievement (ARIIA) in private category

• To be ranked in QS/THE Asia level rankings.

2. Accreditation Targets:

• To aim for NBA accreditation for all the programs of the Institute

• Achieve and maintain NAAC A++ grade in all future cycles

• Engineering and technology programs to be accredited by ABET

3. Outreach Targets:

• National and international recognition in research and development in Engineering, Technology and allied sciences.

• The Institute shall emerge as preferred destination for faculty, staff, students and employers through incorporation of best international organizational structures and standards.

• The Institute shall strive to be recognized as a premier Innovation and IPR hub.

• Enable its graduates to lead National and Global level start-ups.

Implementation and Monitoring:

Short Term Plans

1. Institute supports the development of infrastructure through state-of-the-art equipment and allocation of funds in the departmental annual budget

2. To uplift the quality of teaching, Institute organizes recruitment drive for quality teachers as well as professors from IITs and NITs as adjunct professors.

3. In April 2021, two new policies were approved and implemented a) Start-up Policy b) Innovation, Incubation and Entrepreneurship Policy

4. The Institute has created a centre for Quantitative Economics and Data Science, which offers a new and innovative five-year Integrated Master of Science course in Quantitative Economics and Data Science 5. Heads of Departments are apprised with the lab certification procedures which are under consideration

Long Term Plans

1. Ranking Targets - We participate in all mandatory ranking frameworks such as NIRF, ARIIA, etc. and diligently employ measures to incorporate the feedback/analysis/ reports received on the Institute performance in these rankings.

2. Accreditation Targets - We are attempting for 100% NBA accreditation of programs and are into our 2nd cycle of NAAC assessment process.

3. Outreach targets - We are into many individual collaborative streaks leading to international publications and innovative research to make ourselves visible nationally and internationally. The newly recruited faculty members are offered seed Grants for promoting higher quality research. We promote a number of events in cultural and technical fronts as part of student activities. A Special Pre-Incubation Support Scheme is devised for funding innovative ideas which may lead to start-ups.

9.6.2 Governing Body, Administrative Setup, Functions of Various Bodies, Service Rules, Recruitment procedures and Promotion Policies (10 marks)

(Provide details of statutory and non-statutory administrative committees like the Governing body, Academic Council/ Senate, Grievance redressal Committee, IQAC, Anti-Raging committee, Disciplinary committee in place; Internal Complaints Committee (Women harassment mitigation committee) etc., provide the approval of these committees along with details of members, the meetings details (meeting notice, agenda, minutes, action taken etc. The service rules, policies and procedures; year of publication are to be listed.)

Birla Institute of Technology operates as a "Deemed to be University" under Section 3 of the UGC Act 1956, with a robust administrative structure aligned with the UGC (Institutions Deemed to be Universities) Regulations, 2023. The Institutes governance framework ensures transparent, accountable, and efficient functioning through various statutory and non-statutory bodies.

Statutory Administrative Bodies

Executive Council

The Executive Council (formerly Board of Governors) serves as the principal executive body of BIT and provides overall supervision and guidance.

The Executive Council shall be the principal executive body of the BIT.

Composition:

(a) Vice-Chancellor — Chairperson

(b) Pro-Vice-Chancellor (if any)

(c) Two members from amongst the Deans of the Institute, by rotation to be appointed by the Vice Chancellor

(d) One Professor, who is not a Dean, by rotation, to be appointed by the Vice Chancellor

(e) One Associate Professor, by rotation, to be appointed by the Vice Chancellor

(f) One Assistant Professor, by rotation, to be appointed by the Vice Chancellor

(g) One nominee of the Commission

(h) Up to four nominees of Hindusthan Charity Trust or General Council

(i) Registrar, the ex-officio Secretary of the Executive Council

Academic Council

The Academic Council is the principal academic body responsible for maintaining educational standards, curriculum development, and examination frameworks.

Composition:

a) Vice Chancellor - Chairperson

b) Pro-Vice-Chancellor (if any)

c) Dean(s), Heads of the Departments or Centres and Directors/ln-charges of Off campuses/Off-Shore campuses

d) All Professors of the Institute and its Off-campuses and Off-shore campuses

e) Five Associate Professors from the Departments or centres, other than the Heads

of the Departments or Centres, by rotation, to be appointed by Vice Chancellor

f) Five Assistant Professors from the Departments or centres other than the Heads

of the Departments or Centres, by rotation, to be appointed by Vice Chancellor

g) Six persons of repute from amongst the educationists or expert for their specialized knowledge, who are not in the service of the Institution, nominated by the Vice-Chancellor

h) The Registrar, ex-officio Secretary of the Academic Council

Finance Committee

The Finance Committee oversees financial planning, reviews annual accounts and budget estimates, and advises on financial policies.

Composition:

(a) Vice Chancellor — Chairperson.

(b) Pro-Vice-Chancellor (if any)

(c) One person nominated by the Sponsoring Body i.e. Hindusthan Charity Trust;

(d) Three persons to be nominated by the Executive Council, out of whom at least one shall be a member of the Executive Council

(e) One representative nominated by the Commission

(f) Three persons to be nominated by the Chancellor

(g) Finance Officer — Secretary - Ex officio

Other Statutory and Non-Statutory Committees

Internal Quality Assurance Cell (IQAC): Ensures academic quality through continuous improvement processes and benchmarking against national standards.

Link on website: https://conference.bitmesra.ac.in/content/iqac/55

Anti-Ragging Committee: Implements UGC regulations for prevention and prohibition of ragging, with representation from faculty, administration, local police, NGOs,and students. Link:

www.bitmesra.ac.in/UploadedDocuments/admindsw/files/GO_Estb_ARC_24-25_1645%20dated%2031-07-2024_Anti%20Ragging_Committee.pdf

Internal Complaints Committee

: Addresses issues related to sexual harassment at workplace, constituted as per the Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013

Link:
www.bitmesra.ac.in/UploadedDocuments/user_admingo/MenuUpload/532025131017_d569b8e1-eaec-4f31-bda2-1dfd60e7d577_55%20Internal%20Complaint%20Committee.pdf
Student Grievance Redressal Committee: Addresses student and staff grievances through a structured mechanism for timely resolution. Students are enabled tosubmit their grievances through the website, the link of which is:
www.bitmesra.ac.in/Other-Department-Pages/content/1/191/194

Service Rules and Policies:

The institute has comprehensive service rules, recruitment procedures, and promotion policies aligned with UGC norms. The Conduct, Discipline and Appeal Rulesgovern employment conditions, code of conduct, leave rules, performance assessment, and disciplinary procedures.These are available on the institute website fortransparency, at the following link:

Rules and Regulations:

www.bitmesra.ac.in/UploadedDocuments/pratyush_869/files/Rules_of_the_Institute.pdf

Conduct, Discipline, and Appeal Rules:

https://www.bitmesra.ac.in/UploadedDocuments/pratyush_869/NewsUPloaded/News_20160303173541669_e482dc26e5c947b099d013093fc7d09f_Menu_634922087114319667_ANNEXURE-VI%20(ITEM%20NO%2046.10).pdf

9.6.3 Transparency (5 marks)

(Information on policies, rules, processes, delegation of financial powers, faculty, students, etc., and dissemination of this information to stakeholders should be made available on the Institute's website. Agendas and minutes of the Governing Body, Academic Council, and Senate are also required to be uploaded on the Institute's website. Additionally, state the extent of awareness among the stakeholders.)

The Institute website is designed to contain all possible information on policies, rules and processes. The usage of the website is encouraged to the maximum through efforts of even uploading the internal notices/orders on the Institute website.

Examples:
1. Minutes of Meetings (Board of Governors (now Executive Council) and Academic Council): https://bitmesra.ac.in/content/1/184
2. UG / PG / Ph.D. Rules and Regulations, Ordinances:
https://bitmesra.ac.in/Visit-Other-Department/1/205
3 . Conduct, Discipline and Appeal Rules:
www.bitmesra.ac.in/UploadedDocuments/pratyush_869/NewsUPloaded/News_20160303173541669_e482dc26e5c947b099d013093fc7d09f_Menu_634922087114319667_ANNEXURE-VI%20(ITEM%20NO%2046.10).pdf

9.7 Budget Allocation, Utilization, and Public Accounting at Institute Level (12 marks)

(Provide a summary of the financial year's budget and actual expenditure incurred exclusively for the institution in the three financial years: CFYm1, CFYm2, and CFYm3. If the management oversees multiple Institutions, exclusive audited records for each Institute must be provided and made available on the Institute's website. The budget should be approved by the Institute BoG/GB/GC before the start of the financial year.)

CFY=Current Financial Year.
CFYm1=Current Financial Year Minus 1.
CFYm2=Current Financial Year Minus 2.
CFYm3=Current Financial Year Minus 3.

Total Income at Institute level: For CFY, CFYm1, CFYm2 & CFYm3

Table 1 – CFY 2025-2026

Total income 1980239000				Actual expenditure (till_____)	Total no. of students	Expenditure per student
Fee	Govt.	Grants	Other sources (specify)			
1565150000	0	37919000	377170000	**1378035000**	7969	172924.5

Table 2 – CFYm1 2024-2025

Total income 2900755000				Actual expenditure	Total no. of students	Expenditure per student
Fee	Govt.	Grants	Other sources (specify)			
2302174000	0	77585000	520996000	2262694000	7293	310255.59

Table 3 – CFYm2 2023-2024

Total income 3397772000				Actual expenditure	Total no. of students	Expenditure per student
Fee	Govt.	Grants	Other sources (specify)			
2105937000	860000000	66964000	364871000	2219013000	7415	299260.01

Table 4 – CFYm3 2022-2023

Total income				Actual expenditure	Total no. of students	Expenditure per student
Fee	Govt.	Grants	Other sources (specify)			
1484161000	70557000	49862000	320774000	1835588000	5296	346598.94

Table No. 9.7.2: Budget and actual expenditure incurred at Institute level

Items	**Budgeted in 2025-26 (till ___)**	**Actual Expenses in 2025-26 (till ___)**	**Budgeted in2024-2025**	**Actual Expenses in2024-2025**	**Budgeted in2023-2024**	**Actual Expenses in2023-2024**	**Budgeted in2022-2023**	**Actual Expenses in2022-2023**
Infrastructure Built-Up	2011500000	12551700	1194079000	17051500	1119478000	26855300	63665400	25005800
Library	22959000	10895000	21276000	15687000	27967000	11832000	22582000	20444000
Laboratory equipment	245729000	61778000	26585700	80293000	25036300	11457900	21162700	57947000
Teaching and non-teaching staff salary	1521173000	86378700	1483810000	1429231000	1314119000	1332191000	1175614000	1116461000
Outreach Programs	11000000	3184000	11350000	8496000	10500000	5323000	12000000	4620000

R&D	50480000	12778000	70910000	37366000	65500000	37128000	69542000	35516000
Training, Placement and Industry linkage	5100000	1722000	6600000	3230000	10025000	4907000	7500000	3576000
SDGs	39400000	11245000	40094000	35824000	30141000	18763000	28965000	20288000
Entrepreneurs hip	6200000	1179000	5000000	1986000	5150000	1718000	9630000	1152000
Others (Lab consumable, Rapair, Exam Expenses, Admission Expenses, Electricity & water, Scholarship, Misc etc.)	630202000	285950000	554288000	480066000	563743000	424019000	376877000	325526000
Total	**4543743000**	**1378035000**	**3653264000**	**2262694000**	**3396986000**	**2219013000**	**2550991000**	**1835588000**

9.8 Program Specific Budget Allocation, Utilization (8)

(Total budget at program level: CFYm1, CFYm2 & CFYm3
CFY=Current Financial Year.
CFYm1=Current Financial Year Minus 1.
CFYm2=Current Financial Year Minus 2.
CFYm3=Current Financial Year Minus 3.)

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 2025-2026

Total Budget: 13500000		**Actual expenditure (till…): 6741000**		**Total No. Of Students: 420**
Demanded	**Actual Allocated**	**Actual Expenditure**	**% Spent**	**Expenditure per student**
24270000	13500000	6741000	49.93	16,050

Table 2 :: CFY 2024-2025

Total Budget 10200000		**Actual expenditure (till…): 12301000**		**Total No. Of Students 390**
Demanded	**Actual Allocated**	**Actual Expenditure**	**% Spent**	**Expenditure per student**
18200000	10200000	12301000	120.6	31541.03

Table 3 :: CFYm1 2023-2024

Total Budget 13673000		**Actual expenditure (till…): 15008000**		**Total No. Of Students 360**
Demanded	**Actual Allocated**	**Actual Expenditure**	**% Spent**	**Expenditure per student**
24485000	13673000	15008000	109.76	41688.89

Table 4 :: CFYm2 2022-2023

Total Budget 12750000		Actual expenditure (till…): 8842000		Total No. Of Students 360
Demanded	**Actual Allocated**	**Actual Expenditure**	**% Spent**	**Expenditure per student**
10100000	12750000	8842000	69.34	24561.11

Table No. 9.8.2: Budget and actual expenditure incurred at program level

Items	Budgeted in 2025-2026	Actual Expenses in 2025-2026 till	Budgeted in 2024-2025	Actual Expenses in 2024-2025 till	Budgeted in 2023-2024	Actual Expenses in 2023-2024 till	Budgeted in 2022-2023	Actual Expenses in 2022-2023 till
Laboratory equipment	5000000	3963000	5425000	7049000	7135000	7826000	6250000	4944000
Software	850000	217000	1450000	1599000	1738000	2354000	520000	133000
SDGs	1200000	349000	1200000	1027000	1000000	407000	1000000	759000
Support for faculty development	1000000	711000	800000	49000	700000	533000	500000	394000
R & D	2200000	479000	2000000	1682000	2000000	1866000	2830000	2565000
Industrial Training, Industry exp	100000	0	100000	58000	100000	5000	100000	24000
Miscellaneous Expenses*	3150000	1022000	2975000	3824000	4550000	4795000	4500000	2574000
Total	**13500000**	**6741000**	**13950000**	**15288000**	**17223000**	**17786000**	**15700000**	**11393000**

9.9 Quality of Learning Resources (Hard/Soft) (5 marks)

(Provide details of available learning resources, including e-resources (books and journals), as well as information on the accessibility of these resources to students. Additionally, describe the support provided to students for self-learning activities.)

Overview of Learning Resources
Physical Infrastructure

- **Library Space**: 3,900 m² (Ground + 2 Floors)
- **Reading Capacity**: 350+ seating spaces
- **Digital Lab**: 15+ PCs for digital access
- **Operating Hours**:
  Monday to Friday: 09:00 AM to 09:00 PM

  Saturday & Sunday: 10:00 AM to 06:00 PM

- **Daily Usage**: 450-500 users visit the library per day

Print Resources (Hard Copy)
Books Collection

- **Total Print Books**: 1,52,801 volumes
- **Unique Titles**: 49,675 titles
- **Subject Coverage**: Science, Engineering, Pharmacy, Management, and Hotel Management

Print Journals

- **Current Print Journals**: 108+ titles

Electronic Resources (Soft Copy)
E-Journals Collection
Total Online Journals: 48,683+ journal titles
Major Database Subscriptions:

1. **Elsevier (Science Direct)** - 855 Journal Titles
   - Engineering: 267 titles
   - Chemical Engineering: 122 titles
   - Chemistry: 149 titles
   - Pharmaceutical, Toxicology, and Pharmaceutics: 122 titles
   - Material Science: 195 titles
2. **IEEE Online E-Journals** - 51,040+ titles
3. Journals: 391+
4. Conference Proceedings: 45,392+
5. Standards: 5,258+
6. Total Titles: 9,775+
7. Comprehensive statistical and business intelligence database
8. **ABI Inform (ProQuest)** - Management Collection
9. **Statista Database** – Management

E-Books Collection:

- **Pearson E-Books**: 183 textbook titles
- **McGraw Hill India**: 72 textbook titles
- **ProQuest E-Book Central**: Perpetual access collection

Technology Infrastructure and Automation
Library Management System

- **Software**: Koha 24.11.01 (Open-source Integrated Library Management System)
- **RFID Technology**: Self-service facilities for book issue/return using smart ID-cum-library cards
- **OPAC Access**: Multiple terminals within library + Web-based remote access

Research and Academic Tools

- **iThenticate 2.0**: Plagiarism detection tool
- **Grammarly**: Writing assistance and grammar checker
- **Knimbus mLibrary**: Remote access platform for e-resources

Accessibility of Resources
Remote Access Capabilities

- **Web-OPAC**: Online catalogue search from anywhere
- **Knimbus M-Library**: Remote access to all subscribed resources via institute email
- **Digital Repository Access**: Through various online platforms

User Support Infrastructure

- **Wi-Fi & Study Zones**: Available throughout the library
- **Digital Lab**: 15+ PCs for electronic resource access
- **Multiple Access Points**: OPAC terminals strategically placed

Support for Self-Learning Activities
Research Support Services

1. **Literature Search Assistance**: Access to academic databases and e-resources
2. **Citation & Reference Management**: Guidance on Zotero, Mendeley, and EndNote
3. **Research Writing Support**: Grammarly access for document polishing
4. **Plagiarism Checking**: iThenticate service for originality verification
5. **Publication Support**:

- Journal selection assistance (Elsevier, Springer, IEEE, ABDC, UGC-CARE)
- Conference alerts
- Predatory journal identification

Academic Profile Development

- **Academic ID Creation**: Support for Vidwan, IRINS, Google Scholar, Scopus, Researcher ID, ORCID, PubMed, ResearchGate

- **Repository Services**: PhD thesis upload to Shodhganga (243+ theses uploaded as of July 2025)

Training and Awareness Programs

- **Digital Literacy Programs**: User awareness and training workshops
- **NDLI Club Activities**: 600+ registered members participating in various educational events
- **Research Assistance**: Professional guidance throughout research lifecycle

Additional Support Services

- Services for Differently-abled Users
- Citation Analysis
- News Clippings Service
- New Arrivals Display

9.10 E-Governance (5 marks)

(E-governance initiatives, sustainable practices in academic and learning management, campus-wide computing resources, and their accessibility and availability to support academic and professional activities for students and faculty.)

Birla Institute of Technology has implemented comprehensive e-governance systems across administrative, academic, and student services domains to enhance efficiency, transparency, and accessibility:

Enterprise Resource Planning (ERP) System:
The Institute employs an ERP system for its academic and administrative functions. This includes admissions, feedback, attendance, assessments, bills processing, mark sheet generation, etc.

Unified Communication Platform:
Integrated email, messaging, and notification systems ensuring timely dissemination of information to students, faculty,and staff while enabling efficient interdepartmental communication.

Digital Library and Repository:
Online access to e-journals, e-books, and research publications.
Remote access capabilities for off-campus research and learning
Subscription to major digital academic databases and resources.

IT Infrastructure:
High-speed internet at 6 GPS (through SIFY Technologies, Vodafone Idea and Reliance Jio) connects all academic buildings and residential areas
Campus-wide Wi-Fi coverage with secured access protocols.

Available Antivirus: ESET Endpoint Security: 2500 User License
The Institute has all necessary videoconferencing and LAN facilities. Regular upgradation and maintenance of hardware and software resources is ensured.

Computing Facilities:
Multiple computer laboratories equipped with modern hardware and software. There are 1800+ computers available for academic purposes.

Accessibility and Availability

24/7 Digital Services:
Round-the-clock availability of critical digital services including LMS, digital library, and student information systems is available
There are remote access capabilities enabling off campus learning and research.

9.11 Initiatives and Implementation of Sustainable Development Goals (SDGs) (10 marks)

(Provide details of initiatives taken towards implementation of SDG specifically on green energy, waste management, preserving water, net zero, quality education, reuse, recycle, less use to renewables, etc. Provide evidences on implementation (projects assigned, R & D activities, entrepreneurial activities, outreach programs etc.)

Birla Institute of Technology (BIT) has demonstrated a strong commitment to implementing Sustainable Development Goals through various initiatives across campus operations, research, education, and community outreach. The following details highlight our multifaceted approach:

Water Conservation and Management (SDG 6)

Comprehensive Rainwater Harvesting (Target 6.4):

The Institute has implemented multiple rainwater harvesting systems:

Rooftop Rainwater Harvesting System

Surface Runoff Harvesting System

Recharge Wells

Our rainwater harvesting capacity increased from 18,278,340 litres in 2022-23 to 20,725,080 litres in 2023-24 demonstrating ongoing improvement in water conservation infrastructure.

Year	2023-24	2024-25	2025-26 (as on Nov 30, 2025)
Rainwater Harvesting Capacity (in litres)	2,07,25,080	1,98,95,060	21,555,100

Water Consumption Monitoring:

Total water consumption was monitored at 62,31,82,000 litres in 2023-24, and 62,23,71,000 litres in 2024-25 with systematic tracking enabling better resource management.

Year	2023-24	2024-25	2025-26 (as on Nov 30, 2025)
Water Consumption (in litres)	623182000	622371000	628671000

Water Treatment Plant (Target 6.1):

A plant with a capacity of 80,000 litres per hour for drinking water supply for the entire campus has been installed.

RO Water System (Target 6.1)– 16 RO plants, with capacity ranging from 500 litres per hour to 5000 litres per hour, are installed.

Green Energy Initiatives (SDG 7)

Electrical System (Target 7.1):

33kV GIS (Gas Insulated Substation) with SCADA for the whole distribution system has been installed.

Solar Panel Installation (Target 7.2):

The Institute has implemented renewable energy sources with solar panels across campus, generating a significant portion of our energy needs. In 2024-25, the campus generated 12,65,201 KW energy on campus, and in 2025-26 (till Oct 2025) 356200 kWh, demonstrating our commitment to reducing dependence on conventional energy sources.

Year	2023-24	2024-25	2025-26 (till Oct 2025)
Solar Energy Generated (kWh)	1281942	1265201	356220

Energy Consumption Monitoring (Target 7.3):

The Institute maintains detailed records of energy consumption, with total energy consumed based on electricity bills, allowing us to track efficiency and identify areas for improvement.

Year	2023-24	2024-25	2025-26 (till Oct 2025)
Total Energy Consumed (based on Electricity Bills) (kWh)	6831630	6693625	3235176

Waste Management and Circular Economy (SDGs 7 and 11)

Total Waste Management (Target 11.6):

In 2023-24, the campus generated 18,29,097 kg and in 2024-25, 19,20,552 kgs of waste, with structured systems to handle different waste streams.

Year	2023-24	2024-25	2025-26
Total Waste Generated (kg)	18,29,097	19,20,552	19,60,000 (approx.)

Recycling and Reuse (Target 11.6):

57,834 kg and 60,726 kg of waste was recycled and reused in 2023-24 and 2024-25 respectively, representing an improvement from previous years (55,080 kg in 2022-23).

Year	2023-24	2024-25	2025-26
Total Recycled and Reused Waste (kg)	57,834	60,726	61,936 (approx.)

Food Waste Management: (Target 7.2)

Organic food waste generated along with dung waste is utilized for Biogas generation

Biogas Generation: 58,000 kg of food waste was converted to biogas energy in 2024-25

Energy Production: 2,400 KWH of biogas was generated from food waste, a significant increase from 1,500 KWH in 2022-23. 1320 KWH of biogas was generated in 2024-25

Composting Systems (Target 11.6):

The Institute has implemented composting systems as a key approach to minimizing yard waste and kitchen waste generated from hostels. The generated compost is used as manure for gardening of the campus.

Sustainable Transportation (SDG 11)

Pedestrian-Friendly Campus (Target 11.7): The Institute promotes walking paths and pedestrian-friendly infrastructure to reduce vehicle dependency on campus.

Infrastructure for Inclusive Education (Target 11.7)

Accessible Facilities: Over 80% of Institute buildings have lifts/ramps and specially designed toilets for differently abled students.

Transportation Assistance: Provision for walking aids, including wheelchairs and transportation between buildings for physically challenged students.

Biodiversity and Green Campus (SDGs 11 and 15)

Biodiversity Register (Target 15.1): Campus Biodiversity Register is maintained, cataloguing all flora and fauna species available in the campus.

Extensive Green Cover (Target 15.A): The campus maintains 250 acres of green area out of the total 749-acre campus with annual tree plantation drives.

Dedicated Green Spaces (Target 11.7):

Multiple categories of green spaces are maintained:

Botanical Garden

Herbal and Medicinal Plant Garden

Green Walkways and Lawns

Community Garden

Environmental Research Zones

Plastic Waste Reduction (SDG 12)

Ban on Single-Use Plastics (Target 12.5): The Institute has implemented a comprehensive ban on single-use plastic items including straws, cutlery, and plates. Campus-wide bins, awareness campaigns, and collection systems support the plastic-free campus initiative.

Through these comprehensive initiatives, the Institute demonstrates significant progress toward multiple SDGs, particularly focusing on clean energy, water conservation, waste management, and quality education while creating a sustainable campus ecosystem that serves as a model for other educational institutions.

9.12 Innovative Educational Initiatives and Implementation (5 marks)

(Provide details of initiatives taken towards mobility of students, implementation of academic bank of credits, and support for holistic education including human values, multidisciplinary/interdisciplinary curriculum/programs, initiatives on Indian Knowledge System, Contribution towards and implementation of teaching in Indian language, etc. Policies on inclusivity and equity and their implementation, support for economically, socially and physically challenged students. Action plan and its implementation for slow learners.)

Birla Institute of Technology (BIT), Mesra, has undertaken several initiatives to enhance student mobility, implement the Academic Bank of Credits (ABC),support holistic education, promote inclusivity and equity, and provide assistance to economically, socially, and physically challenged students. Below is an overview of these efforts:

1. Implementation of Academic Bank of Credits (ABC)

- BIT Mesra has adopted the Academic Bank of Credits (ABC) system as envisioned in NEP-2020.
- This allows students to accumulate and transfer credits earned across different recognized institutions.
- It enables flexibility and mobility in higher education and supports lifelong learning.

2. Curriculum Revision as per NEP-2020 and AICTE Guidelines

- The institute has redesigned curricula for programs like B.Tech, IMSc, and other undergraduate/postgraduate programs.
- These revisions are aligned with NEP-2020 framework and AICTE model curriculum, focusing on:
  - Flexibility in subject selection.
  - Skill-based and outcome-oriented learning.
  - Integration of theoretical knowledge with practical application.

3. Standard Operating Procedures for Fast and Slow Learners

- Developed and implemented an SOP specifically tailored for identifying and supporting both fast and slow learners.
- Fast learners are encouraged to:
  - Take on research projects.
  - Enrol in MOOCs for advanced knowledge.
- Slow learners receive:
  - Additional tutorials and mentoring.
  - Remedial sessions and personalized academic plans to help them catch up.

4. Integration of Value-Based and Holistic Education

NEP-aligned courses such as:

- Universal Human Values
- Indian Knowledge System (IKS)
- Constitution of India

- These aim to develop students ethical, civic, and cultural understanding, aligning technical education with societal values.

5. Introduction of Interdisciplinary and Multidisciplinary Courses

- BIT has embedded interdisciplinary courses into the curriculum, encouraging students to explore domains outside their primary discipline.
- Environmental Science is a mandatory interdisciplinary course, fostering environmental consciousness and sustainability awareness.
- Promotes well-rounded learning and flexibility in academic exploration.

6. Adoption of MOOCs and SWAYAM

- Integration of Massive Open Online Courses (MOOCs) via platforms like SWAYAM allows:
  - Access to high-quality content from national and international educators.
  - Students to learn at their own pace and expand beyond traditional classroom education.
- Credits from these courses are recognized and included in the final evaluation.

7. Emphasis on Research and Innovation from Early Semesters

- Research projects are now introduced from the 5th semester onwards in B.Tech and similar programs.
- This early exposure:
  - Helps build a research mindset.
  - Gives students sufficient time to undertake substantive and quality research work.
  - Encourages participation in innovation challenges and publications.

8. Mentor-Mentee System

- BIT has institutionalized a Mentor-Mentee System, complete with an SOP to guide faculty and students.
- Each student is assigned a mentor who:
  - Tracks academic progress.
  - Provides personal and career guidance.
  - Assists in resolving academic or emotional difficulties.

9. Inclusivity and Equity Policies

- Offers a range of scholarships and financial aid, including:
  - Merit-cum-means scholarships
  - GP Birla Scholarship
  - SC/ST/OBC/EWS category support as per government norms.
- Provides academic and emotional support to economically weaker sections and differently-abled students to ensure equitable access to education.

10. Modified Evaluation Pattern to Enhance Student Engagement

- Shifted from a traditional exam-centric model to a more interactive evaluation system, including:
  - Assignments and project work
  - Seminars and presentations
  - Class discussions

- Focus is on continuous assessment, active participation, and critical thinking rather than rote memorization.

9.13 Faculty Performance Appraisal and Development System (FPADS) (10 marks)

(Faculty members of Higher Educational Institutions today have to perform a variety of tasks pertaining to diverse roles. In addition to instruction, faculty members need to innovate and conduct research for their self-renewal, keep abreast of changes in technology, and develop expertise for the effective implementation of curricula. They are also expected to provide services to the industry and community to understand and contribute to solving real-life problems in industry. Another role involves shouldering administrative responsibilities and cooperating with other faculty, heads of departments, and the head of the institute. An effective performance appraisal system for faculty is vital for optimizing the contribution of individual faculty to institutional performance.

The assessment is based on a well-defined system for faculty appraisal for all the assessment years and its implementation and effectiveness.)

BIT Mesra has a structured faculty appraisal system called the Career Growth Scheme (CGS) that facilitates promotion and regularization of internal candidates.

The CGS provides pathways for:

- Teaching staff with Ph.D. degrees to advance from positions like Associate Lecturer/Teaching Assistant/Research Scholar
- Regularization from contract to regular positions
- Promotion across academic levels (AL10 to AL11, AL11 to AL12, etc.)
- Advancement from Assistant Professor to Associate Professor (AL-13A) and Professor (AL-14)

The evaluation criteria include:

- Academic qualifications (Ph.D. is essential for all levels)
- Teaching/research experience (increasing with position level)
- Research publications in peer-reviewed journals (2 publications at entry level, up to 15+ for Professor)
- Citation metrics (ranging from 100+ to 1000+ depending on position)
- Patents (becoming increasingly important at higher levels)
- Ph.D. supervision experience
- Sponsored research projects
- Teaching effectiveness and course development

Additional credit is given for:

- Developing new courses or laboratory facilities
- Publishing textbooks/book chapters
- Administrative contributions
- Organizing conferences/workshops
- Industry collaboration and technology transfer

The assessment process involves application submission, departmental committee evaluation, and interviews through either a Selection Committee or Selection Board depending on the position level. Candidates must provide comprehensive information about their academic background, research output, teaching experience, and professional contributions in a standardized format.

The system follows a progressive structure with increasingly rigorous requirements for higher academic positions, creating a clear pathway for faculty career advancement at the institution.

The detailed SOP for new faculty recruitment, promotion and regularization of Birla Institute of Technology is available in our website at

https://bitmesra.ac.in/UploadedDocuments/adminfa/files/SOP_New_Faculty%20Recruitment%20Promotion%20%26%20Regularization.pdf

STANDARD OPERATING PROCEDURE

NEW FACULTY RECRUITMENT, PROMOTION, and REGULARIZATION

BIRLA INSTITUTE OF TECHNOLOGY
(A Deemed to be University u/s 3 of UGC Act, 1956) MESRA, RANCHI - 835 215
JHARKHAND, INDIA

POLICY

1. **Coverage**

These guidelines are issued in accordance with the minimum qualifications and requirements outlined in the UGC Guidelines for the Recruitment of New Faculty Members across various academic levels. Birla Institute of Technology (BIT) Mesra makes the necessary amendments based on the Institute's requirements to maintain high standards of education and research. The criteria for recruitment, or the type of requirement or promotion, are based on the quality and targets that the Institution aims to achieve in the near future.

2. **The Faculty Recruitment Process**

The recruitment process begins with an open advertisement for new faculty positions on the Institute Website (www.bitmesra.ac.in) and, if required, through print and social media. The step-by-step process to be followed during the recruitment process for various positions is outlined in the **Table. 1.**

3. **The Recruitment Guidelines**

The UGC 2018 guidelines on minimum qualifications will be broadly adopted. (https://www.ugc.gov.in/pdfnews/4033931_UGC-Regulation_min_Qualification_Jul2018.pdf). The Institute provides guidelines from time to time on recruitment/promotion that are deemed necessary to maintain the quality of education/research, and to promote the betterment of the Institute. Typically, advertisements for new faculty recruitment through open positions or Career Growth Scheme (CGS) contain most of the necessary information and specific guidelines related to the recruitment process, including eligibility, experience (desirable or mandatory), specialization, campus, and other relevant details.

4. **Type of positions, Pay Scales, and Age of Superannuation:**

The Institute generally offers the following faculty positions to maintain an adequate faculty-to-student ratio, in line with the targets the Institution aims to achieve in the near future.

- Assistant Professor
- Associate Professor
- Professor
- Visiting Faculty (Visiting Assistant Professor/Associate Professor/Professor)
- Adjunct Faculty (Adjunct Assistant Professor/Associate Professor/Professor)
- Guest Faculty (Guest Assistant Professor/Associate Professor/Professor)
- Professor of Practice (PoP) (Assistant PoP/ Associate PoP/ PoP)
- Chair Professor/Chair

The nature of faculty appointments may be regular or contractual, as required. The pay scale for regular appointments follows scales such as AL10, AL11, AL12, AL13A, or AL14, as per UGC guidelines. The competent authority provides further guidelines on allowances and other benefits, if applicable, to employees of BIT Mesra.

In addition to regular and/or permanent positions, the Institute also offers contractual positions that last from a few months to a year or more based on the Institute's requirements and vacancy position availability. Contractual staff typically enjoy a consolidated salary with provisions for extensions and increments, based on an overall performance review by an expert committee, followed by approval from the competent authority.

BIT Mesra may offer a new faculty position or promotional opportunity to an internal candidate (a BIT employee) to join on a consolidated pay basis through a contract appointment, as per the Institute's requirements. Those faculty members who are on contract and/or receive consolidated pay may need to apply through an open advertisement (not internal), as may be advertised from time to time, to explore the possibility of securing a regular position through an open selection process that may involve selection by an expert committee. The selection for regular positions will be competitive and without any bias or constraints from among the eligible applicants. Thus, despite their contractual position at BIT, they must compete in an open selection process. The Institute is not obliged to give any priority or special consideration to internal faculty members in an open selection process.

Subject to the availability of positions and requirements, the faculty members may be re-employed on a contractual appointment beyond the age of superannuation up to the age of seventy years. Further, all such re-employment shall strictly follow the guidelines prescribed by the UGC and BIT norms, as declared from time to time.

5. Selection Process

To enhance the credibility of the system, BIT Mesra will assess the ability for teaching and/or research aptitude through a seminar or lecture (in online or offline mode) in a classroom setting or through a discussion with experts or faculty members on the ability to utilize the latest technology, i.e., in teaching and research at the interview stage.

Overall, the selection process (Table 1) follows a three-step screening-cum-selection process as follows:

5A. Screening of the application form for shortlisting: The Departmental Screening Committee (constituted as below) verifies eligibility following the advertisement, desirable experience, and domain-specific knowledge and expertise.

Screening Committee:

Member 1:	Chairperson: HoD
Member 2:	Department Faculty Member, Nominated by HoD
Member 3:	Department Faculty Member, Nominated by HoD
Member 4:	Department Faculty Member, Nominated by DoFA

5B. Conceptual and Technical Assessment: The Departmental Expert Committee (constituted as below), under the chairmanship of the Head of Department, invites shortlisted candidates who qualified in the screening round to present their research and teaching abilities. The committee may conduct a written test (if required) to assess the candidature for the technical presentation round. Mere eligibility will not guarantee a call for an interview. The Departmental Expert Committee will reserve the right to decide how many of the eligible candidates, based on teaching-cum-research presentations and interaction, are suitable to appear in the interview for final selection.

The committee will shortlist the successful candidates and recommend them for the next round.

Departmental Expert Committee:

Member 1: Chairperson: HoD
Member 2: Department Faculty Member, Nominated by HoD
Member 3: Department Faculty Member, Nominated by HoD
Member 4: Department Faculty Member, Nominated by DoFA
Member 5: Faculty member from Allied Department/ Campus Nominated by DoFA

5C. Final Interview: An Institute-level final selection committee will be formed for the Final interview process, comprising the Vice Chancellor (Chairperson), Chancellor's Nominee, External Expert(s), HoD (exofficio), and the Dean of Faculty Affairs (DoFA). Candidates shortlisted from the 2nd step appear for an Interview before the Committee. The final selection is based on the committee's recommendations.

6. **Promotion / Regularization Guidelines**

The Institute implements a Career Growth Scheme (CGS) for internal faculty promotion and/or regularization, and communicates and circulates it internally. Only internal faculty can apply for promotion/regularization under CGS.

The above-mentioned 3-step screening process (5A-C), employed in the faculty recruitment process, is applicable in the promotion/regularization process. The contractual faculty members must appear for an interview, as advertised, before an expert committee for regularization as discussed in the selection process (above Section 5).

Candidates selected for regular positions through the above process are offered probationary appointments. The initial probation period is one year, which may be extended based on the candidate's performance.

Faculty members submit a self-assessment report (SAR) at the end of each academic calendar. The institute's faculty assessment committee will evaluate the SAR and Departmental recommendation, along with a short CV of the faculty member, and provide recommendations to the competent authority. The competent authority reserves the right to regularize or extend the probation period. The assessment criteria and parameters for SAR may be revised periodically by the Institute Authority to ensure quality and commitment among the serving faculty members.

TABLE 1: STEP-BY-STEP PROCESS FOR RECRUITMENT UNDER VARIOUS POSITIONS

Step	Process/Activity
1	HOD/Directors/In charge share requirement with DoFA: An internal discussion will be held based on the student/faculty ratio, research, and the requirement for competent authority approval to process the advertisement of the Open Position.
2	Designing of advertisements with detailed information in consultation with the respective department to publish on our website (www.bitmesra.ac.in) and if required, to advertise through print/social media.
3	The aspiring candidate will follow the advertisement and guidelines to apply for the faculty position by the application deadline. If any candidate faces an issue with their application process, they may contact the office of the Dean of Faculty Affairs (email: hr@bitmesra.ac.in).
4	Timelines and Communication to follow up on the process will be within the timeframe.
5	Screening of the application for shortlisting: The Departmental Committee verifies eligibility in accordance with the advertisement, desirable experience, and domain-specific departmental requirements.
6	Conceptual and Technical Assessment: The Departmental Expert Committee, under the chairmanship of the Head of Department, invites shortlisted candidates who qualified in the Screening to present their technical presentations, assessing their conceptual skills, teaching aptitude, and research credentials through a written test (if required) and to follow up on test-qualified candidates through expert committee interaction in a seminar.
7	Internal review of the departmental committee's recommendation for shortlisting candidates for the final interview, based on conceptual-technical assessment scores and departmental subject/specialization domain requirements.
8	Final Interview by an Expert Committee under the Chairmanship of the Vice-Chancellor
9	Final selection and approvals
10	Communication and Notifications to the candidates will be sent through email only. The final selection list will be updated on the Institute website.

Note: The enclosed short CV format, CGS Form, and Guidelines are provided to help the candidate understand the mandatory and desirable requirements that the selection committee will consider when selecting or promoting candidates for the faculty position.

Refer to Annexures for further details:

Annexure 1: Sample copy of recent open advertisement (GO/RECTT/2025-26/Fac-1, dated 14/5/2025)

Annexure 2: Candidate Short CV format for Open Recruitment Process.

Annexure 3: Candidate Short CV format for Internal (BIT) faculty members for Career Growth Scheme (CGS)

Annexure 4: CGS Form with Guidelines

Annexure 5: Self Appraisal Report Format of Faculty Members

Annexure 6: Constitution of the Institute's Faculty Assessment Committee

9.14 Outreach Activities (5 marks)

(Provide details of outreach activities such as community service, Unnat Bharat Abhiyan, social internship and society connect activities undertaken by the students and their achievements.)

● The NSS BIT Mesra has been adopted 10 villages which are as follows:
1. Nawatoli 2. Pancholi 3. Mesra east 4. Mesra west 5. Kedal
6. Humboi 7. Chuttu 8. Newori 9. Kenduatoli 10. Rudiya

● Awareness Programme:
NSS BIT Mesra regularly conducts awareness drives in these villages to educate residents on the following topics:
1. Road Safety 2. Dengue and Malaria 3. Importance Of Education 4. Cyber Fraud
5. Women Empowerment 6. Junk Food 7. Voting Awareness 8. Swachhata Abhiyan
9. Nasha Mukhti

● DRIVES ,CAMPS ,SEMINARS AND VISITS:
NSS BIT Mesra organises these all activities in the campus and villages for the students and residents:
1. Cloth Distribution Drive 2. Book Distribution Drive 3. Health Checkup Camp 4. Blood Donation Camp
5. Eye Checkup Camp 6. Plantation Drive 7. OldAge Home Visit 8. Mask and sanitizer Distribution Drive
9. AIDS Seminar 10. MentalHealth Seminar 11. Organ Donation Drive 12. Plasma Donation Drive13. Flood Relief 14. Cleanliness Drive

● FLAGSHIP EVENTS:
The flagship events of NSS BIT Mesra which are on a fixed interval are as follows: 1. Prabhat Phari 2. Blood Donation Camp 3. Swachh Bharat

● ACHIEVEMENTS
1. BIT Mesra secured 4th position in India for cashless transactions in year (2016).
2. Mr.Prashant Kumar received the prestigious NSS award for the year (2015-2016) from the honorable President of India Shri.Pranab Mukherjee.
3. Mr.Ravi kumar received Prestigious NSS AWARD for the year (2017-2018) by the honorable President of India Shri.Ram Nath Kovind
4. Dr. Om Prakash Pandey received Prestigious NSS AWARD for the year(2018-2019) by the honorable President of India Shri.Ram Nath Kovind
5. Mr.Rahul Raj received Prestigious NSS AWARD for the year(2020-2021) by the honorable President of India Shri. Ram Nath Kovind
6. Mr. Shivam kumar was selected to be the part of Republic Day Parade on 26th January on Kartavya Path, New Delhi.
7. Highest record of collecting blood units in the year 2024 Blood Donation Camp with the support of volunteers as well as involved blood banks staffs.Record was 400+ units.

● VILLAGE EDUCATION PROGRAMME:
VILLAGE EDUCATION PROGRAMME(VEP) is an initiative taken by NSS BIT Mesra This programme has been successfully running at Four centers forthe children of villages
These centers are: 1. Kishlay Vidya Mandir (in Rudiya) 2. BIT School (in Bhatatoli) 3. Pancholi 4. Nawatoli

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