NATIONAL BOARD OF ACCREDITATION

Data Capturing Points of the Program Applied for NBA Accreditation– Tier I/II UG (Engineering) Institute Programs

Program Name : Mechanical Engineering	**Discipline**: Engineering & Technology
Level : Under Graduate	**Tier**: 2
Application No: 11943	**Date of Submission**: 20-06-2026

PART A- Profile of the Institute

A1.Name of the Institute: COLLEGE OF ENGINEERING, ADOOR	
Year of Establishment : 1994	Location of the Institute: Adoor
A2. Institute Address:COLLEGE OF ENGINEERING ADOOR MANAKALA ADOOR	
City:Pathanamthitta	State:Kerala
Pin Code:691551	Website:www.cea.ac.in
Email:ceadoortc@gmail.com	Phone No(with STD Code):04734-230640
A3. Name and Address of the Affiliating University (if any):	
Name of the University :	City: Thiruvananthapuram
State : Kerala	Pin Code: 695016
A4. Type of the Institution: Government Institute	
A5. Ownership Status: State Government	

A6. Details of all Programs being Offered by the Institution:

- No. of UG programs: **5**
- No. of PG programs: **0**

Table No. A6.1: List of all programs offered by the Institute.

Sr.No.	Discipline	Level of program	Name of the program	Year of Start	Year of Closed	Name of The Department
1	Engineering & Technology	UG	Computer Science and Engineering	1995	--	Computer Science and Engineering
2	Engineering & Technology	UG	Computer Science and Engineering (Data Science)	2023	--	Computer Science and Engineering (Data Science)
3	Engineering & Technology	UG	Electrical and Electronics Engineering	2011	--	Electrical and Electronics Engineering
4	Engineering & Technology	UG	Electronics & Communication Engineering	1995	--	Electronics and Communication Engineering
5	Engineering & Technology	UG	Mechanical Engineering	1995	--	Mechanical Engineering

A7. Programs to be considered for Accreditation vide this Application:

Table No. A7.1: List of programs to be considered for accreditation.

Name of the Department	Having Allied Departments	Name of the Program	Program Level
Mechanical Engineering	No	Mechanical Engineering	UG

Table No. A7.2: Allied Department(s) to the Department of the program considered for accreditation as above.

Cluster ID. Name of the Department (in table no. A7.1) Name of allied Departments/Cluster (for table no. A7.1)

No Record

PART-B: Program information

B1. Provide the Required Information for the Program Applied For:

Table No. B1: Program details.

A. List of the Programs Offered by the Department:

SR.NO.	PROGRAM NAME	PROGRAM APPLIED LEVEL	YEAR OF START / YEAR OF CLOSED	SANCTIONED INTAKE	INCREASE/DECREASE INTAKE (if any)	YEAR OF INCREASE/DECREASE	CURRENT INTAKE	YEAR OF AICTE APPROVAL	AICTE/COMPETENT AUTHORITY ARRO DETAILS
1	Mechanical Engineering	UG	1995 / --	60	Yes	2023	60	2023	F.No. South-West/1-46228004207/2026/E

Sanctioned Intake for Last Five Years for the Mechanical Engineering	
Academic Year	**Sanctioned Intake**
2025-26	60
2024-25	60
2023-24	60
2022-23	120
2021-22	120
2020-21	120

List of the Allied Departments/Cluster and Programs:

B2. Detail of Head of the Department for the program under consideration:

A. Name of the HoD :	Jose Mathew
B. Nature of appointment:	Regular
C. Qualification:	Ph.D

B3. Program Details

Table No.B3.1: Admission details for the program excluding those admitted through multiple entry and exit points.

Item (Information to be provided cumulatively for all the shifts with explicit headings, wherever applicable)	2025-26 (CAY)	2024-25 (CAYm1)	2023-24 (CAYm2)	2022-23 (CAYm3)	2021-22 (CAYm4)	2020-21 (CAYm5)	2019-20 (CAYm6)
N=Sanctioned intake of the program (as per AICTE /Competent authority)	60	60	60	120	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	56	53	28	27	43	62	86
N2=Number of students admitted in 2nd year in the same batch via lateral entry including leftover seats	0	9	17	18	19	17	20
N3=Separate division if any	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
Total number of students admitted in the program (N1 + N2 + N3 + N4) - excluding those admitted through multiple entry and exit points.	56	62	45	45	62	79	106

CAY= Current Academic Year. CAYm1= Current Academic Year Minus 1 CAYm2= Current Academic Year Minus 2. LYG= Last Year Graduate. LYGm1= Last Year Graduate Minus 1. LYGm2= Last Year Graduate Minus 2.

B4. Enrolment Ratio in the First Year

Table No. B4.1: Student enrolment ratio in the 1st year.

Year of entry	N (From Table 4.1)	N1 (From Table 4.1)	N4 (From Table 4.1)	Enrollment Ratio [(N1/N)*100]

2025-26 (CAY)	60	56	0	93.33
2024-25 (CAYm1)	60	53	0	88.33
2023-24 (CAYm2)	60	28	0	46.67

Average [(ER1 + ER2 + ER3) / 3] = 76.11≡ 14.00

B5. Success Rate of the Students in the Stipulated Period of the Program

Table No.B5.1: The success rate in the stipulated period of a program.

Item	(2021-22) LYG	(2020-21) LYGm1	(2019-20) LYGm2
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).	132.00	132.00	132.00
B=No. of students who graduated from the program in the stipulated course duration	40.00	37.00	57.00
Success Rate (SR)= (B/A) * 100	30.30	28.03	43.18

Average SR of three batches ((SR_1+ SR_2+ SR_3)/3): 33.84

B6. Academic Performance of the First-Year Students of the Program

Table No.B6.1: 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)	4.60	5.40	5.10
Y=Total no. of successful students	53.00	28.00	27.00
Z=Total no. of students appeared in the examination	53.00	28.00	27.00
API [X*(Y/Z)]	4.60	5.40	5.10

Average API[(AP1+AP2+AP3)/3] : 5.03

B7: Academic Performance of the Second Year Students of the Program

Table No.B7.1: 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)	4.30	4.70	6.10
Y=Total no. of successful students	45.00	43.00	61.00
Z=Total no. of students appeared in the examination	45.00	45.00	62.00
API [X * (Y/Z)]	4.30	4.49	6.00

Average API [(AP1 + AP2 + AP3)/3] : 4.93

B8. Academic Performance of the Third Year Students of the Program

Table No.B8.1: 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)	5.70	6.40	6.30
Y=Total no. of successful students	43.00	58.00	78.00
Z=Total no. of students appeared in the examination	43.00	61.00	79.00
API [X*(Y/Z)]:	5.70	6.09	6.22

Average API [(AP1 + AP2 + AP3)/3] : 6.00

B9. Placement, Higher Studies, and Entrepreneurship

Table No.B9.1: Placement, higher studies, and entrepreneurship details.

Item	LYG (2021-22)	LYGm1(2020-21)	LYGm2(2019-20)
FS*=Total no. of final year students	132.00	132.00	132.00
X=No. of students placed	34.00	34.00	45.00
Y=No. of students admitted to higher studies	3.00	6.00	4.00
Z= No. of students taking up entrepreneurship	0.00	0.00	1.00

Placement Index(P) = (((X + Y + Z)/FS) * 100):	28.03	30.30	37.88

Average Placement Index = (P_1 + P_2 + P_3)/3: 32.07 Placement Index Points:

PART C: Faculty Details in Department and Allied Departments

(Data to be filled in for the Department and Allied Departments)

C1. Faculty details of Department and Allied Departments

Table No.C1: Faculty details in the Department for the past 3 years including CAY

Sr.No	Name of the Faculty	PAN No.	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)	Cur Ass (Y/N
1	Jose Mathew	XXXXXXX07L	Ph.D	National Institute of Technology, Thiruchirappally	Manufacturing Engineering	15/07/2016	9.11	Professor	Professor		Regular	Yes
2	Binulal B R	XXXXXXX40R	Ph.D	University of Kerala	Machine Design	17/06/2010	15.11	Associate Professor	Professor	10/10/2017	Regular	Yes
3	Suresh Kumar N	XXXXXXX72Q	Ph.D	National Institute of Technology, Calicut	Industrial Engineering	08/10/2021	4.8	Professor	Professor		Regular	Yes
4	Venkitaraj K P	XXXXXXX30J	Ph.D	National Institute of Technology, Thiruchirappally	Thermal Engineering	21/07/2000	26.8	Lecturer	Professor	27/07/2019	Regular	Yes
5	Nidhin S	XXXXXXX93M	M.Tech	University of Kerala	Industrial Refrigeration and Cryogenics	29/09/2025	0.8	Assistant Professor	Assistant Professor		Contractual Fulltime	Yes
6	Sajomon Mathew	XXXXXXX98M	M.Tech	Cochin University of Science and Technology	Thermal Engineering	01/08/2016	7.5	Assistant Professor	Assistant Professor		Contractual Fulltime	No
7	Thoufeeq R	XXXXXXX17Q	M.Tech	APJ Abdul Kalam Technological University	Machine Design	02/08/2019	6.1	Assistant Professor	Assistant Professor		Contractual Fulltime	No
8	Sujith G	XXXXXXX34J	M.Tech	University of Kerala	Industrial Refrigeration and Cryogenics	22/08/2023	0.10	Assistant Professor	Assistant Professor		Contractual Fulltime	No
9	Arun Kumar C	XXXXXXX18P	M.E.	Anna University	Thermal Engineering	21/08/2020	5.9	Assistant Professor	Assistant Professor		Regular	Yes
10	John Seprian Fernandez S	XXXXXXX97D	B.Tech	University of Kerala	Mechanical Engineering	02/06/2014	12	Assistant Professor	Assistant Professor		Regular	Yes
11	Baiju V	XXXXXXX88J	M.Tech	University of Kerala	Industrial Refrigeration and Cryogenics	11/11/2021	4.7	Associate Professor	Associate Professor		Regular	Yes
12	Revikumar Thampi V R	XXXXXXX83N	M.Tech	IIT Madras	Aerospace Engineering	12/11/2021	4.7	Assistant Professor	Assistant Professor		Regular	Yes
13	Manu M John	XXXXXXX98Q	Ph.D	University of Kerala	Mechanical Engineering	30/08/2024	1.9	Associate Professor	Associate Professor		Regular	Yes
14	Santhosh T	XXXXXXX13A	M.Tech	University of Kerala	Industrial Refrigeration and Cryogenics	25/07/2016	9.10	Assistant Professor	Assistant Professor		Regular	Yes

15	Anoop R	XXXXXXX09M	M.Tech	Cochin University of Science and Technology	Computer Aided Structural Engineering	21/07/2015	10.10	Assistant Professor	Assistant Professor		Contractual Fulltime	Yes
16	Manuraj R	XXXXXXX92H	M.Tech	Amrita Vishwa Vidyapeetham	Thermal and Fluid Engineering	08/08/2016	9.10	Assistant Professor	Assistant Professor		Contractual Fulltime	Yes
17	Madhu A K	XXXXXXX38B	Ph.D	National Institute of Technology Calicut	Nanoscale Heat Transfer	20/05/2010	15.2	Assistant Professor	Assistant Professor		Regular	No
18	Vishnu V Krishnamoorthy	XXXXXXX83N	M.Tech	National Institute of Technology Calicut	Energy Engineering and Management	31/03/2022	4.2	Assistant Professor	Assistant Professor		Contractual Fulltime	Yes
19	Sunilkumar K	XXXXXXX44H	Ph.D	Cochin University of Science and Technology	Industrial Engineering	19/09/2016	9.9	Professor	Professor		Regular	Yes
20	Sanjay Raj C R	XXXXXXX82K	M.Tech	University of Kerala	Propulsion Engineering	21/07/2022	2.1	Assistant Professor	Assistant Professor		Regular	No

Table No.C2: Faculty details of Allied Departments for the past 3 years including CAY.

C2. Student-Faculty Ratio (SFR)

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)).

No. of UG Programs in the Department1 No. of PG Programs in the Department0

Table No.C2.1: Student-faculty ratio.

Description	**CAY(2025-26)**	**CAYm1 (2024-25)**	**CAYm2 (2023-24)**
UG1.B	66	66	132
UG1.C	66	132	132
UG1.D	132	132	132
UG1: Mechanical Engineering	**264**	**330**	**396**
DS=Total no. of students in all UG and PG programs in the Department	264	330	396
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=** 264	**S2=** 330	**S3=** 396
DF=Total no. of faculty members in the Department	13	15	16
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=** 13	**F2=** 15	**F3=** 16
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= 20.31**	**SFR2= 22.00**	**SFR3= 24.75**
Average SFR for 3 years	**SFR= 22.35**		

C3. Faculty Qualification

- Faculty qualification index (FQI) = 2.5 * [(10X +4Y)/RF] where
- 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.
- 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 C2 of this documents: (RF=S/20).

Table No.C3.1: Faculty qualification.

Year	X	Y	RF	FQ = 2.5 x [(10X + 4Y) / RF)]
2025-26(CAY)	5	8	13.00	15.77
2024-25(CAYm1)	6	9	16.00	15.00
2023-24(CAYm2)	5	11	19.00	12.37

C4. Faculty Cadre Proportion

- Faculty Cadre Proportion is 1(RF1): 2(RF2): 6(RF3)
- RF1= No. of Professors required = 1/9 * No. of Faculty required to comply with 20:1 Student-Faculty ratio based on no. of students (S) as per C2 of this documents:.
- RF2= No. of Associate Professors required = 2/9 * No. of Faculty required to comply with 20:1 Student-Faculty ratio based on no. of students (S) as per section C2 of this documents:.
- RF3= No. of Assistant Professors required = 6/9 * No. of Faculty required to comply with 20:1 Student-Faculty ratio based on no. of students (S) as per section C2 of this documents:.
- Faculty cadre and qualification and experience should be as per AICTE/UGC norms.

Table No.C4.1: Faculty cadre proportion details.

Year	Professors		Associate Professors		Assistant Professors	
	Required RF1	Available AF1	Required RF2	Available AF1	Required RF3	Available AF3
2025-26	1.00	5.00	3.00	0.00	9.00	5.00
2024-25	2.00	5.00	4.00	0.00	11.00	6.00
2023-24	2.00	5.00	4.00	0.00	13.00	6.00
Average	RF1=1.67	AF1=5.00	RF2=3.67	AF2=0.00	RF2=11.00	AF2=5.67

C5. Visiting/Adjunct Faculty/Professor of Practice

Table No. C5.1: List of visiting/adjunct faculty/professor of practice and their teaching and practical loads.

(CAYm1)

(CAYm2)

(CAYm3)

C6. Academic Research

Table No. C6.1: Faculty publication details.

S.No.	Item	2024-25 (CAYm1)	2023-24 (CAYm2)	2022-23 (CAYm3)
1	No. of peer reviewed journal papers published	3	2	1
2	No. of peer reviewed conference papers published	5	1	0
3	No. of books/book chapters published	1	0	1

C7. Sponsored Research Project

Table No. C7.1: List of sponsored research projects received from external agencies.

(CAYm1)

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) i.e. 15,25,000=15.25
Venkitaraj K.P	Binulal B. R.	Mechanical Engineering	Novel Design of Ultra high Conductive Heat Sink	Kerala State Council for Science, Technology andEnvironment	2 years	5.50
Venkitaraj K.P		Mechanical Engineering	Experimental investigation of a photovoltaic thermal collector using nano-enhanced binary PCM and hybrid nanofluids.	APJAKTU -CERD	6 months	0.50
						Amount received (Rs.):6.00

(CAYm2)

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) i.e. 15,25,000=15.25
Anoop R		Mechanical Engineering	Design , analysis and fabrication of an all terrain robotic rover with enhanced mobility and stability using a modified rocker-bogie mechanism	APJAKTU - CERD	6 months	0.50
Anoop R		Mechanical Engineering	Performance analysis of an immersion based battery thermal management system	APJAKTU - CERD	6 months	0.39
						Amount received (Rs.):0.89

(CAYm3)

Total Amount (Lacs) Received for the Past 3 Years: 6.89

Note*:

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

C8. Consultancy Work

Table No. C8.1: List of consultancy projects received from external agencies.

(CAYm1)

(CAYm2)

(CAYm3)

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

Note*:

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

C9. Institution Seed Money or Internal Research Grant to its Faculty for Research Work

Table No. C9.1: List of faculty members received seed money or internal research grant from the Institution.

(CAYm1)

(CAYm2)

(CAYm3)

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

PART D: Laboratory Infrastructure in the Department

(Data to be filled in for the Department)

D1. Adequate and Well-Equipped Laboratories, and Technical Manpower

Table No.D1.1: List of laboratories and technical manpower.

Sr. No	Name of the Laboratory	Number of students per set up(Batch Size)	Name of the Important Equipment	Weekly utilization status(all the courses for which the lab is utilized)	Technical Manpower Support		
					Name of the Technical staff	Designation	Qualification
1	Thermal Engineering Lab	4	Petrol and Diesel engine set ups, Vapour absorption and Vapour	6 Hours	Mr. Radhakrisl	Foreman	Diploma in Me
2	Material Testing Lab	4	Universal Testing Machine, Torsion Testing Machine, Spring Testing	6 Hours	Mr. Girish G	Workshop Inst	Diploma in Me
3	Heat and Mass Transfer Lab	4	Heat exchangers: Shell and Tube regenerative, parallel and	6 Hours	Mr. Manoj Kun	Workshop Inst	Diploma in Me
4	Machine Shop	3	Lathe, Shaper, Milling Machines, Slotter, Universal Tool Grinder,	6 Hours	Mr. Girish G	Workshop Inst	Diploma in Me
5	Metrology and Measurements Lab	2	Surface roughness tester, Linear and angular measuring instruments,	6 Hours	Mr. Gopalan G	Workshop Ass	ITI
6	CAD/CAM Lab	1	Desktop computers, Ansys, AutoDesk Inventor, Solidedge, Hyperworks,	24 Hours	Ms. Reshmam	Workshop Ass	MCA
7	Fluid Mechanics and Machinery Lab	3	Pelton, Francis, Turbines, Positive displacement and rotodynamic	6 Hours	Mr. Varghese	Workshop Ass	ITI
8	Basic Engineering Workshop	1	Hand tools and equipment for Fitting, Carpentry, Sheet metal, Welding and	4 hours	Mr. Preejith P	Workshop Ass	ITI
9	Mechatronics Lab	1	Basic and Electro-pneumatic system, Programmable Logic Controller,	6 Hours	Mr. Manoj Kun	Workshop Inst	Diploma in Me

D2. Safety Measures in Laboratories

Table No. D2.1: List of various safety measures in laboratories.

Sr. No	Laboratory Name	Safety Measures
1	Mechanical Engineering Workshop	□ Use of lab coats and shoes are mandatory in the workshop. □ Shorts, sandals, or open-toed shoes are not allowed in the workshop. □ The students are advised to refrain from wearing jewelry and loose clothing, and are asked to tie back long hair before starting work. □ Students work under the expert supervision of technical staff. □ Powder type fire extinguisher is available in the workshop. □ The fire extinguishers are routinely checked to ensure proper operation as and when the need arises. □ First aid kit is available in the laboratory. □ Personal protective equipment are mandatory while performing operations like welding.
2	CAD/CAM Lab	□ Electrical circuits are protected by MCB and fuses. □ Gas type fire extinguisher is available in the laboratory. □ The fire extinguishers are routinely checked to ensure proper operation as and when the need arises
3	Material Testing Laboratory	□ Use of Lab coats and shoes are mandatory in the laboratory. □ Shorts, sandals, or open-toed shoes are not allowed in the laboratory. □ The students are advised to refrain from wearing jewelry and loose clothing, and are asked to tie back long hair before starting work. □ Students work under the expert supervision of technicians. □ Powder type fire extinguisher is available in the laboratory. □ The fire extinguishers are routinely checked to ensure proper operation as and when the need arises. □ First aid kit is available in the laboratory. □ Electrical circuits are protected by MCB and fuses.
4	Thermal Engineering Laboratory	□ Use of Lab coats and shoes are mandatoryin the laboratory. □ Shorts, sandals, or open-toed shoes are not allowed in the laboratory. □ The students are advised to refrain from wearing jewelry and loose clothing, and are asked to tie back long hair before starting work. □ Students work under the expert supervision of technicians. □ Powder type fire extinguisher is available in the laboratory. □ The fire extinguishers are routinely checked to ensure proper operation as and when the need arises. □ First aid kit is available in the laboratory. □ Electrical circuits are protected by MCB and fuses

5	Fluid Mechanics Laboratory	□ Use of Lab coats and shoes are mandatory in the laboratory. □ Shorts, sandals, or open-toed shoes are not allowed in the laboratory. □ The students are advised to refrain from wearing jewelry and loose clothing, and are asked to tie back long hair before starting work. □ Students work under the expert supervision of technicians. □ Powder type fire extinguisher is available in the laboratory. □ The fire extinguishers are routinely checked to ensure proper operation as and when the need arises. □ First aid kit is available in the laboratory. □ Electrical circuits are protected by MCB and fuses □ The floor and equipment are kept dry at all times.
6	Machine Shop	□ Use of Labcoats and shoes are mandatory in the workshop. □ Shorts, sandals, or open-toed shoes are not allowed in the workshop. □ The students are advised to refrain from wearing jewelry and loose clothing, and are asked to tie back long hair before starting work. □ Students work under the expert supervision of technicians. □ Powder type fire extinguisher is available in the workshop. □ The fire extinguishers are routinely checked to ensure proper operation as and when the need arises. □ First aid kit is available in the laboratory. □ Electrical circuits are protected by MCB and fuses.
7	Metrology and Measurements Laboratory	□ Use of Lab coats and shoes are mandatory in the laboratory. □ Shorts, sandals, or open-toed shoes are not allowed in the laboratory. □ The students are advised to refrain from wearing jewelry and loose clothing, and are asked to tie back long hair before starting work. □ Gas type fire extinguisher is available in the laboratory. □ The fire extinguishers are routinely checked to ensure proper operation as and when the need arises. □ First aid kit is available in the laboratory.
8	Heat and Mass Transfer Laboratory	□ Use of Lab coats, and shoes are mandatory in the laboratory. □ Shorts, sandals, or open-toed shoes are not allowed in the laboratory. □ The students are advised to refrain from wearing jewelry and loose clothing, and are asked to tie back long hair before starting work. □ Students work under the expert supervision of technicians. □ Powder type fire extinguisher is available in the laboratory. □ The fire extinguishers are routinely checked to ensure proper operation as and when the need arises. □ First aid kit is available in the laboratory. □ Electrical circuits are protected by MCB and fuses.
9	Computational Fluid Dynamics Laboratory	□ Electrical circuits are protected by MCB and fuses. □ Gas type fire extinguisher is available in the laboratory. □ The fire extinguishers are routinely checked to ensure proper operation as and when the need arises.
10	Advanced Thermal Engineering Laboratory	□ Use of Lab coats and shoes are mandatory in the laboratory. □ Shorts, sandals, or open-toed shoes are not allowed in the laboratory. □ The students are advised to refrain from wearing jewelry and loose clothing and are asked to tie back long hair before starting work. □ Students work under the expert supervision of technicians. □ Powder type fire extinguisher is available in the laboratory. □ The fire extinguishers are routinely checked to ensure proper operation as and when the need arises. □ First aid kit is available in the laboratory.

D3. Project Laboratory/Research Laboratory

The Project Laboratory in the Department of Mechanical Engineering is a specialized facility designed to support B.Tech students during their pre-final and final-year capstone projects. The lab provides a comprehensive ecosystem combining high-performance computational infrastructure with advanced physical testing and measurement equipment. This dual approach enables students to execute full-cycle engineering projects—from simulation and design to prototyping, testing, and validation.

Laboratory Objectives

The primary objectives of the project lab are to:

- Facilitate hands-on experience with modern computational tools for structural, thermal, and fluid flow analysis.
- Provide robust experimental setups for research in alternative fuels, aerodynamics, and material properties.
- Equip students with industry-standard data acquisition and calibration techniques.
- Foster innovation and complex problem-solving skills to bridge the gap between theoretical knowledge and practical application.

Key Facilities and Infrastructure

The laboratory is divided into three functional domains to support a wide spectrum of mechanical engineering domains:

A. Computational Mechanics & Design Facility

This section provides the processing power and software required for complex Computer-Aided Engineering (CAE), Finite Element Analysis (FEA), and Computational Fluid Dynamics (CFD).

- **High-Performance Computing:** 3x HP DL380 Servers equipped with dual Intel Xeon processors and 64 GB RAM ensure rapid solving times for complex, high-mesh density simulations.
- **Software Suite:** Altair Hyperworks (Research License) provides an enterprise-level platform for structural optimization, multi-body dynamics, and fluid simulation.

B. Thermal & Fluid Sciences Testing Unit

Built to support experimental projects in energy systems, aerodynamics, and thermal management.

- **Multifuel Variable Compression Ratio (VCR) Engine:** Allows students to investigate engine performance, combustion characteristics, and emission profiles across various fuel blends (bio-fuels, synthetics) while manipulating the compression ratio.
- **Low-Speed Wind Tunnel:** Essential for aerodynamic testing, drag/lift calculation on airfoil prototypes, and flow visualization studies.

C. Advanced Measurement, Calibration, & Processing

A suite of precision instruments for data logging, material processing, and thermal profiling.

- **Thermal Imager & Data Acquisition System (DAQ):** Enables real-time, non-contact temperature mapping and the accurate logging of transient experimental data (pressure, temperature, flow rates).
- **Fluid Properties Analysis:** A Brookfield Rotational Viscometer and pH meter allow for detailed rheological and chemical profiling of working fluids, lubricants, and bio-fuels.
- **Thermal Processing & Calibration:** A Muffle Furnace, Hot Air Oven, Brookfield Waterbath, and Ultrasonic bath support material preparation, heat treatment studies, and fluid mixing. The Dry Block Calibrator ensures sensor accuracy across all student experiments.

Alignment with Program Outcomes (POs)

The integration of these specific facilities directly supports core Program Outcomes critical to B.Tech accreditation standards:

- **PO3 (Design/Development of Solutions):** Supported by the iteration cycle between the HP/Altair computational suite and physical testing.
- **PO4 (Conduct Investigations of Complex Problems):** Facilitated by the VCR engine and Wind Tunnel for applied research.
- **PO5 (Modern Tool Usage):** Directly addressed through student proficiency with Altair Hyperworks, Thermal Imaging, and DAQ integration.

PART E: First Year faculty and financial Resources

(Data to be filled in for the first year course faculty and budget allocation and utilization)

E1. First Year Student-Faculty Ratio (FYSFR)

Table No. E1.1: 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 faculty members ((NS1*0.8) + (NS2*0.2))/(No. of required faculty (RF4)); Percentage= ((NS1*0.8) + (NS2*0.2))/RF
2023-24(CAYm2)	360	18	7	44	80
2024-25(CAYm1)	360	18	8	41	81

2025-26(CAY)	360	18	6	51	83

E2. Budget Allocation, Utilization, and Public Accounting at Institute Level

Table No. E2.1: Budget and actual expenditure incurred at Institute level.

Items	Budgeted in 2025-26	Actual Expenses in 2025-26 till	Budgeted in 2024-25	Actual Expenses in 2024-25 till	Budgeted in 2023-24	Actual Expenses in 2023-24 till	Budgeted in 2022-23	Actual Expenses in 2022-23 till
Infrastructure Built-Up	400000	309815	800000	698133	3500000	133711	600000	583361
Library	600000	13570	600000	144560	300000	158070	200000	132345
Laboratory equipment	4419000	189377	350000	170656	600000	520402	2500000	1269107
Teaching and non-teaching staff salary	90233000	85912095	102935000	75667597	80000000	76909815	80750000	83805301
Outreach Programs	200000	0	190474	175964	194613	195782	214390	200997
R&D	200000	116116	200000	0	200000	0	200000	0
Training, Placement and Industry linkage	800000	0	851613	348691	1443599	310979	300000	0
SDGs	5000000	4176623	4000000	3954675	5000000	2596510	5000000	4103550
Entrepreneurship	100000	0	100000	0	100000	0	100000	0
Others, specify (Maintenance and	2000000	813549	1200000	1013663	500000	286974	2000000	1746086
Total	**103952000**	**91531145**	**111227087**	**82173939**	**91838212**	**81112243**	**91864390**	**91840747**

E3. Budget Allocation, Utilization, and Public Accounting at Program Specific Level

Table No. E3.1: Budget and actual expenditure incurred at program level.

Items	Budgeted in 2025-26	Actual Expenses in 2025-26 till	Budgeted in 2024-25	Actual Expenses in 2024-25 till	Budgeted in 2023-24	Actual Expenses in 2023-24 till	Budgeted in 2022-23	Actual Expenses in 2022-23 till
Laboratory equipment	200000	37787	300000	171050	300000	241129	400000	298220
Software	100000	0	100000	0	100000	0	100000	0
SDGs	1500000	822361	1500000	828400	1500000	670171	1500000	1487741
Support for faculty development	50000	0	50000	0	50000	0	50000	0
R & D	116116	116116	0	0	0	249826	0	0
Industrial Training, Industry expert,	100000	0	100000	0	100000	0	100000	0
Salary, Consumables and	24000000	22503070	24000000	23002230	24000000	22105004	24000000	23144729
Total	**26066116**	**23479334**	**26050000**	**24001680**	**26050000**	**23266130**	**26150000**	**24930690**