

## NATIONAL BOARD OF ACCREDITATION

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

<b>Program Name</b> : Biotechnology	<b>Discipline</b> : Engineering & Technology
<b>Level</b> : Under Graduate	<b>Tier</b> : 1
<b>Application No</b> : 10644	<b>Date of Submission</b> : 02-06-2025

### PART A- Profile of the Institute

<b>A1.Name of the Institute</b> : NATIONAL INSTITUTE OF TECHNOLOGY, ROURKELA	
Year of Establishment : .	Location of the Institute:
<b>A2. Institute Address</b> :NATIONAL INSTITUTE TECHNOLOGY	
City:ROURKELA	State:Odisha
Pin Code:769008	Website:www.nitrkl.ac.in
Email:REGISTRAR@NITRKL.AC.IN	Phone No(with STD Code):0661-2472050
<b>A3. Name and Address of the Affiliating University (if any):</b>	
Name of the University : NIL	City:
State :	Pin Code:
<b>A4. Type of the Institution</b> : NIT	
<b>A5. Ownership Status</b> :	

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

- No. of UG programs: **16**
- No. of PG programs: **35**

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	Architecture	UG	Architecture	2013	--	Architecture
2	Engineering & Technology	UG	Artificial Intelligence and Data Science	2024	--	Computer Science and Engineering
3	Engineering & Technology	PG	Biomedical Engineering	2007	--	Biotechnology and Medical Engineering
4	Engineering & Technology	UG	Biomedical Engineering	2007	--	Biotechnology and Medical Engineering
5	Engineering & Technology	UG	Biotechnology	2007	--	Biotechnology and Medical Engineering
6	Engineering & Technology	PG	Biotechnology	2007	--	Biotechnology and Medical Engineering
7	Engineering & Technology	UG	Ceramic Engineering	1994	--	Ceramic Engineering
8	Engineering & Technology	PG	Ceramic Engineering (Integrated/Dual)	2010	--	Ceramic Engineering
9	Engineering & Technology	UG	Chemical Engineering	1963	--	Chemical Engineering

10	Engineering & Technology	PG	Chemical Engineering	1981	--	Chemical Engineering
11	Engineering & Technology	PG	Chemical Engineering (Integrated/Dual)	2010	--	Chemical Engineering
12	Engineering & Technology	UG	Civil Engineering	1961	--	Civil Engineering
13	Engineering & Technology	PG	Communication and Networks	2012	--	Electronics and Communication Engineering
14	Engineering & Technology	PG	Computer Science and Engineering	1995	--	Computer Science and Engineering
15	Engineering & Technology	UG	Computer Science and Engineering	1986	--	Computer Science and Engineering
16	Engineering & Technology	PG	Control and Automation	2010	--	Electrical Engineering
17	Engineering & Technology	PG	Cryogenic and Vacuum Technology	2013	--	Mechanical Engineering
18	Engineering & Technology	UG	Electrical Engineering	1961	--	Electrical Engineering
19	Engineering & Technology	UG	Electronics & Communication Engineering	2004	--	Electronics and Communication Engineering
20	Engineering & Technology	UG	Electronics & Instrumentation Engineering	1987	--	Electronics and Communication Engineering
21	Engineering & Technology	PG	Electronics & Instrumentation Engineering	2010	--	Electronics and Communication Engineering
22	Engineering & Technology	PG	Electronics Systems & Communication	2003	--	Electrical Engineering
23	Engineering & Technology	PG	Energy and Environmental Engineering	2018	--	Chemical Engineering
24	Engineering & Technology	PG	Environmental Engineering	2023	--	Civil Engineering
25	Engineering & Technology	UG	Food Processing and Engineering	2013	--	Food Processing and Engineering
26	Engineering & Technology	PG	Food Processing and Engineering	2018	--	Food Processing and Engineering
27	Engineering & Technology	PG	Geotechnical Engineering	1971	--	Civil Engineering
28	Engineering & Technology	PG	Industrial Ceramics	2012	--	Ceramic Engineering
29	Engineering & Technology	UG	Industrial Design	2010	--	Industrial Design
30	Engineering & Technology	PG	Industrial Design	2013	--	Industrial Design
31	Engineering & Technology	PG	Information Security	2007	--	Computer Science and Engineering
32	Engineering & Technology	PG	Machine Design & Analysis	1970	--	Mechanical Engineering
33	Engineering & Technology	PG	Manufacturing and Automation Engineering	1970	--	Mechanical Engineering
34	Engineering & Technology	UG	Mechanical Engineering	1961	--	Mechanical Engineering
35	Engineering & Technology	UG	Metallurgical & Materials Engineering	1963	--	Metallurgical and Materials Engineering

36	Engineering & Technology	PG	Metallurgical and Materials Engineering	1970	--	Metallurgical and Materials Engineering
37	Engineering & Technology	PG	Metallurgical and Materials Engineering (Integrated/Dual)	2010	--	Metallurgical and Materials Engineering
38	Engineering & Technology	PG	Microwave & Radar Engineering	2018	--	Electronics and Communication Engineering
39	Engineering & Technology	PG	Mining Engineering	2013	--	Mining Engineering
40	Engineering & Technology	UG	Mining Engineering	1979	--	Mining Engineering
41	Engineering & Technology	PG	Mining Engineering (Integrated/Dual)	2010	--	Mining Engineering
42	Engineering & Technology	PG	Power Electronics & Drives	2007	--	Electrical Engineering
43	Engineering & Technology	PG	Power Systems Engineering	2017	--	Electrical Engineering
44	Engineering & Technology	PG	Signal & Image Processing	2012	--	Electronics and Communication Engineering
45	Engineering & Technology	PG	Software Engineering	2010	--	Computer Science and Engineering
46	Engineering & Technology	PG	Structural Engineering	1971	--	Civil Engineering
47	Engineering & Technology	PG	Thermal Engineering	2005	--	Mechanical Engineering
48	Engineering & Technology	PG	Transportation Engineering	2010	--	Civil Engineering
49	Engineering & Technology	PG	VLSI Design & Embedded Systems	2005	--	Electronics and Communication Engineering
50	Engineering & Technology	PG	Water Resource Engineering	2010	--	Civil Engineering
51	Management	PG	Masters in Business Administration	2010	--	Management

**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
Metallurgical and Materials Engineering	No	Metallurgical & Materials Engineering	UG
Chemical Engineering	No	Chemical Engineering	UG
Biotechnology and Medical Engineering	No	Biotechnology	UG
Electrical Engineering	No	Electrical Engineering	UG
Biotechnology and Medical Engineering	No	Biomedical 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
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## 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 APPROVAL DETAILS	ACCREDITATION STATUS	FROM	TO	NO. OF TIMES PROGRAM ACCREDITED
1	Biotechnology	UG	2007 / --	15	Yes	2011	35	2011	NA	Granted accreditation for 3 years for the period (specify period)	2022	2025	4

Sanctioned Intake for Last Five Years for the Biotechnology	
Academic Year	Sanctioned Intake
2024-25	35
2023-24	38
2022-23	38
2021-22	38
2020-21	38
2019-20	30

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 :	Prof. Devendra Verma
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)	2024-25 (CAY)	2023-24 (CAYm1)	2022-23 (CAYm2)	2021-22 (CAYm3)	2020-21 (CAYm4)	2019-20 (CAYm5)	2018-19 (CAYm6)
N=Sanctioned intake of the program (as per AICTE /Competent authority)	35	38	38	38	38	30	30
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	39	38	40	42	36	33	30
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
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.	39	38	40	42	36	33	30
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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]
2024-25 (CAY)	35	39	0	111.43
2023-24 (CAYm1)	38	38	0	100.00
2022-23 (CAYm2)	38	40	0	105.26

Average  $[(ER1 + ER2 + ER3) / 3] = 105.56 \approx 100$

#### 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	(2020-21) LYG	(2019-20) LYGm1	(2018-19) 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).	38.00	33.00	30.00
B=No. of students who graduated from the program in the stipulated course duration	36.00	32.00	23.00
Success Rate (SR)= (B/A) * 100	94.74	96.97	76.67

Average SR of three batches  $((SR_1 + SR_2 + SR_3)/3)$ : 89.46

#### 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( 2023-24 )	CAYm2( 2022-23 )	CAYm3 ( 2021-22 )
Mean of CGPA or mean percentage of all successful students(X)	7.28	6.79	8.12
Y=Total no. of successful students	38.00	40.00	42.00
Z=Total no. of students appeared in the examination	38.00	40.00	42.00
API $[X*(Y/Z)]$	7.28	6.79	8.12

Average API  $[(AP1+AP2+AP3)/3]$  : 7.40

#### 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 ( 2023-24 )	CAYm2 ( 2022-23 )	CAYm3 ( 2021-22 )
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)	8.04	7.32	7.72
Y=Total no. of successful students	38.00	42.00	36.00
Z=Total no. of students appeared in the examination	40.00	42.00	36.00
API $[ X * (Y/Z) ]$	7.64	7.32	7.72

Average API  $[(AP1 + AP2 + AP3)/3]$  : 7.56

#### 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 (2023-24)	CAYm2 (2022-23)	CAYm3 (2021-22)
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)	7.32	7.32	7.65
Y=Total no. of successful students	42.00	36.00	33.00
Z=Total no. of students appeared in the examination	42.00	36.00	33.00
API [ X*(Y/Z) ]:	7.32	7.32	7.65

Average API [ (AP1 + AP2 + AP3)/3 ] : 7.43

#### B9. Placement, Higher Studies, and Entrepreneurship

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

Item	LYG (2020-21)	LYGm1(2019-20)	LYGm2(2018-19)
FS*=Total no. of final year students	38.00	33.00	30.00
X=No. of students placed	19.00	19.00	20.00
Y=No. of students admitted to higher studies	3.00	7.00	0.00
Z= No. of students taking up entrepreneurship	0.00	0.00	0.00
Placement Index(P) = (((X + Y + Z)/FS) * 100):	57.89	78.79	66.67

Average Placement Index = (P\_1 + P\_2 + P\_3)/3: 67.78 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)	Currently Associated (Y/N)	In case of NO, Date of Leaving	IS HOD?
1	Prof. Krishna Pramanik	XXXXXXXX02F	Ph.D	Calcutta University	Biomaterial & Tissue engineering	07/07/2006	18.10	Associate Professor	Professor	31/07/2006	Regular	Yes		No
2	Prof. Subhankar Paul	XXXXXXXX28Q	Ph.D	IIT-Delhi	Nanotechnology in Environmental Remediation , Waste to Wealth , Nanotechnology in Therapeutic Applic	02/07/2007	17.10	Associate Professor	Professor	28/02/2020	Regular	Yes		No
3	Prof. Mukesh Kumar Gupta	XXXXXXXX51Q	Ph.D	Konkuk University	Animal Biotechnology	19/12/2011	13.4	Associate Professor	Professor	28/02/2020	Regular	Yes		No

4	Prof. Kunal Pal	XXXXXXXX91E	Ph.D	IIT-KGP	Biomaterials, Bioinstrumentation, Biosignal processing, Drug delivery, Food science	07/01/2009	16.4	Assistant Professor	Professor	28/02/2018	Regular	Yes		No
5	Prof. A. Thirugnanam	XXXXXXXX60E	Ph.D	IIT-Madras	Biomechanics	01/08/2011	13.9	Assistant Professor	Professor	28/02/2018	Regular	Yes		No
6	Prof. Amit Biswas	XXXXXXXX17K	Ph.D	IIT-KGP	Biomaterials, Surface Engg. Corrosion & oxidation of implants	02/07/2007	17.10	Assistant Professor	Associate Professor	01/07/2024	Regular	Yes		No
7	Prof. Bibhukalyan Prasad Nayak	XXXXXXXX34A	Ph.D	NIT-Rourkela	Regenerative Medicine	14/07/2008	16.9	Assistant Professor	Assistant Professor		Regular	Yes		No
8	Prof. Nandini Sarkar	XXXXXXXX02E	Ph.D	IIT-Guwahati	Structural Biology	29/08/2011	13.8	Assistant Professor	Associate Professor	01/07/2024	Regular	Yes		No
9	Prof. Devendra Verma	XXXXXXXX84K	Ph.D	North Dakota State University	Tissue Engineering	14/02/2014	11.2	Assistant Professor	Associate Professor	02/01/2023	Regular	Yes		Yes
10	Prof. Nivedita Patra	XXXXXXXX18K	Ph.D	IIT- Delhi	Bioprocess Engineering	26/02/2014	11.2	Assistant Professor	Associate Professor	01/07/2024	Regular	Yes		No
11	Prof. P. Balasubramanian	XXXXXXXX77K	Ph.D	IIT-Madras	Environmental Biotechnology	28/04/2014	11	Assistant Professor	Associate Professor	01/07/2024	Regular	Yes		No
12	Prof. Kasturi Dutta	XXXXXXXX92N	Ph.D	IIT-Guwahati	Bioprocess Engineering	10/07/2015	9.9	Assistant Professor	Associate Professor	01/07/2024	Regular	Yes		No
13	Prof. Angana Sarkar	XXXXXXXX18A	Ph.D	IIT-KGP	Environmental Biotechnology	01/07/2015	9.10	Assistant Professor	Associate Professor	01/07/2024	Regular	Yes		No
14	Prof. J. Sivaraman	XXXXXXXX66F	Ph.D	NIT-Trichy	Biomedical Instruments	15/02/2018	7.2	Assistant Professor	Assistant Professor		Regular	Yes		No
15	Prof. Anju R. Babu	XXXXXXXX57H	Ph.D	IISc Bangalore	Biomechanics	15/02/2018	7.2	Assistant Professor	Assistant Professor		Regular	Yes		No
16	Prof. A. Ravi Kant	XXXXXXXX15A	Ph.D	IIT Kanpur	Biomechanics	11/06/2020	4.10	Assistant Professor	Assistant Professor		Regular	Yes		No
17	Prof. Prasoon Kumar	XXXXXXXX16K	Ph.D	IIT Bombay and Monash University	Microfluidics, Lab-on-chip devices, tissue engineering	16/06/2020	4.10	Assistant Professor	Assistant Professor		Regular	Yes		No
18	Prof. Bala Chakravarthy Neelapu	XXXXXXXX30B	Ph.D	CSIR	Biomedical Image Processing	06/03/2020	5.1	Assistant Professor	Assistant Professor		Regular	Yes		No
19	Prof. Mirza Khalid Baig	XXXXXXXX68L	Ph.D	Imperial College London	Biomedical Instrumentation, Machine Learning	01/07/2020	4.10	Assistant Professor	Assistant Professor		Regular	Yes		No

20	Prof. Earu Banoth	XXXXXXXX73E	Ph.D	IISc Bangalore	Optics and Microfluidics for Biomedical Applications	01/07/2020	4.10	Assistant Professor	Assistant Professor		Regular	Yes		No
21	Prof. Amrita Singh	XXXXXXXX17K	Ph.D	TIET Punjab	Cancer epidemiology , cancer biology, DNA repair in cancer biology	24/04/2023	2	Assistant Professor	Assistant Professor		Regular	Yes		No
22	Prof. Anamika Singh	XXXXXXXX20B	Ph.D	IIT Delhi	Bioprocess and Biochemical Engineering, Metabolic Engineering, Recombinant protein production in yea	21/04/2023	2	Assistant Professor	Assistant Professor		Regular	Yes		No
23	Prof. Lohit Kumar Srinivas Gujjala	XXXXXXXX12C	Ph.D	IIT Kharagpur	Biorefinery development, Waste valorization, Techno-economic analysis, LCA, Scaling of Bioprocess	15/05/2023	1.11	Assistant Professor	Assistant Professor		Regular	Yes		No
24	Prof. Bikash Chandra Maharaj	XXXXXXXX15A	Ph.D	UNESCO IHE Delft	Environmental Biotechnology, Bioinformatics, Bioprocess Engineering	28/08/2024	0.8	Assistant Professor	Assistant Professor		Regular	Yes		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 Department3 No. of PG Programs in the Department2

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

Description	CAY(2024-25)	CAYm1 (2023-24)	CAYm2 (2022-23)
UG1.B	38	38	38
UG1.C	38	38	38
UG1.D	38	38	30
<b>UG1: Biotechnology</b>	<b>114</b>	<b>114</b>	<b>106</b>
UG2.B	38	38	38
UG2.C	38	38	38
UG2.D	38	38	30
<b>UG2: Biomedical Engineering</b>	<b>114</b>	<b>114</b>	<b>106</b>
PG1.A	15	15	25
PG1.B	15	25	25
<b>PG1: Biomedical Engineering</b>	<b>30</b>	<b>40</b>	<b>50</b>
PG2.A	25	25	25
PG2.B	25	25	25
<b>PG2: Biotechnology</b>	<b>50</b>	<b>50</b>	<b>50</b>
DS=Total no. of students in all UG and PG programs in the Department	308	318	312
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)	<b>S1= 308</b>	<b>S2= 318</b>	<b>S3= 312</b>
DF=Total no. of faculty members in the Department	24	23	20
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)	<b>F1= 24</b>	<b>F2= 23</b>	<b>F3= 20</b>
FF=The faculty members in F who have a 100% teaching load in the first-year courses	1	1	0
Student Faculty Ratio (SFR)=S/(F-FF)	<b>SFR1= 13.39</b>	<b>SFR2= 14.45</b>	<b>SFR3= 15.60</b>
Average SFR for 3 years	<b>SFR= 14.48</b>		

### 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 = $2.5 \times [(10X + 4Y) / RF]$
2024-25(CAY)	24	0	15.00	40.00
2023-24(CAYm1)	23	0	15.00	38.33
2022-23(CAYm2)	20	0	15.00	33.33

### C4. Faculty Cadre Proportion

- Faculty Cadre Proportion is 1(RF1): 2(RF2): 6(RF3)
- RF1= No. of Professors required =  $1/9 * \text{No. of Faculty required to comply with 20:1 Student-Faculty ratio based on no. of students (S) as per C2 of this documents:}$ .
- RF2= No. of Associate Professors required =  $2/9 * \text{No. of Faculty required to comply with 20:1 Student-Faculty ratio based on no. of students (S) as per section C2 of this documents:}$ .
- RF3= No. of Assistant Professors required =  $6/9 * \text{No. of Faculty required to comply with 20:1 Student-Faculty ratio based on no. of students (S) as per section C2 of this documents:}$ .
- 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
2024-25	1.00	5.00	3.00	7.00	10.00	12.00
2023-24	1.00	5.00	3.00	1.00	10.00	17.00
2022-23	1.00	5.00	3.00	0.00	10.00	15.00
Average	RF1=1.00	AF1=5.00	RF2=3.00	AF2=2.67	RF2=10.00	AF2=14.67

#### 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)

S.No	Name of the Person	Designation	Organization	Name of the Course	No. of hours handled
1	Biswajit Mohapatra	Dean of Academics	Jaiprakash (JP) Hospital and Research Centre	Value Education and Yoga	12.00

(CAYm2)

(CAYm3)

#### C6. Academic Research

Table No. C6.1: Faculty publication details.

S.No.	Item	2023-24 (CAYm1)	2022-23 (CAYm2)	2021-22 (CAYm3)
1	No. of peer reviewed journal papers published	300	267	124
2	No. of peer reviewed conference papers published	57	50	23
3	No. of books/book chapters published	18	16	8

#### 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
Prof. Kasturi Dutta	NA	Department of Biotechnology and Medical Engineering, NIT Rourkela	Two-stage treatment of household laundry wastewater for recycle and reuse	HEFA-CSR	2023-2026	39.60
Prof. Kasturi Dutta	NA	Department of Biotechnology and Medical Engineering, NIT Rourkela	Studies on biodegradation of microfibers in bio-augmented engineered biochar amended constructed wetland treating laundry wastewater	CSIR-ASPIRE	2024-2027	23.61
Prof. NAndini Sarkar	NA	Department of Biotechnology and Medical Engineering, NIT Rourkela	Development of amyloid based hydrogels for biomedical applications	CSIR-ASPIRE	2024-2027	29.00
						Amount received (Rs.):92.21

**(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
Dr. Angana Sarkar	Other 9 PI and 6 Co-Pis	Department of Biotechnology and Medical Engineering, NIT Rourkela	Study on Condition Assessment and Management Plan- on Mahanadi River Basin	Ministry of Jalsakti, Govt. of India	NA	600.00
Prof. P Balasubramanian	NA	Department of Biotechnology and Medical Engineering, NIT Rourkela	Development of a low-cost and effective seeding material for struvite precipitation by thermochemical conversion of microalgal biomass.	DST-SERB	2022-23	32.47
						Amount received (Rs.):632.47

**(CAYm3)**

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
Prof. Mukesh Kumar Gupta	NA	Department of Biotechnology and Medical Engineering, NIT Rourkela	Unfolding newer therapeutic strategies by identifying significant biomarkers for human mastitis through multi- omics and big data analysis.	ICMR	2021	20.22
Prof. Mukesh Kumar Gupta	NA	Department of Biotechnology and Medical Engineering, NIT Rourkela	Establishment of Bioinformatics and Computational Biology Centre: Animal Bioinformatics	Department of Biotechnology (DBT), Govt. of India.	2021-2026	74.70
Prof. P Balasubramanian	NA	Department of Biotechnology and Medical Engineering, NIT Rourkela	Nano zerovalent Iron- Graphene oxide composite for enhanced biodegradation wastewater A novel strategy for boosting biogas production.	DST	2021-2024	22.68
						Amount received (Rs.):117.60

**Total Amount (Lacs) Received for the Past 3 Years: 842.28**

**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)

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
Prof. Angana Sarkar (Co-PI)	NA	Department of Biotechnology and Medical Engineering, NIT Rourkela	Consultancy work on Scientific Studies of "safety and Feasibility of 07 (seven) nos.of Opencast Mines of SECL for filling of Fly Ash (As Co-PI)	South Eastern Coalfield Ltd	2022-25	104.80
Prof. P. Balasubramanian	Prof. Parag Sutar	Department of Biotechnology and Medical Engineering, NIT Rourkela	Eucalyptus reactor design	Kerone Engineering	2022-23	2.36
						Amount received (Rs.):107.16

(CAYm3)

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
Prof. Angana Sarkar	Prof. S Jayanthu	Department of Biotechnology and Medical Engineering, NIT Rourkela	Consultancy service & scientific study for hexavalent chromium reduction at ostapal mines	Vedanta Groups of India, Ostapal Chromite mine	2021-2022	6.24
						Amount received (Rs.):6.24

**Total amount (Lacs) received for the past 3 years: 113.40****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)

Faculty name	Project title/ Support for Activity	Duration of the project	Amount(Lacs) i.e. 15,25,000=15.25	Amount Utilized(Lacs) i.e. 15,25,000=15.25	Outcomes of the project
Dr. Amrita Singh	R & D on Cancer Biology	2023-2024	2.00	2.00	Establishment of research Lab
Dr. Anamika Singh	R & D on Metabolic engg	2023-2024	2.00	2.00	Establishment of research Lab
Dr. Lohit Kumar Srinivas Gujjala	R & D on Bioprocess engg	2023-2024	2.00	2.00	Establishment of research Lab
			Amount received (Rs.): 6.00		

(CAYm2)

Faculty name	Project title/ Support for Activity	Duration of the project	Amount(Lacs) i.e. 15,25,000=15.25	Amount Utilized(Lacs) i.e. 15,25,000=15.25	Outcomes of the project
			Amount received (Rs.): 0		

(CAYm3)

Total amount (Lacs) received for the past 3 years : 6.00

## 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	Medical Electronics and Instrumentation Laboratory-I & II	40	ELVIS-II+, DSC, FTIR, Texture analyser, Probe sonicator, DSO, Signal generator, ECG Recorder, etc.	It is used for PC	Haladhar Behera	Technical Staff	Technical Staff B.Tech
2	Biomimetics Laboratory	40	High Pressure Reactor, Inverted Microscope, Probe sonicator (2), CO2 incubator (2), Microplate Reader, Etc.	It is used for PC	Satyabrata Prusty	Technical Staff	Technical Staff B.Tech
3	Applied Biomechanics lab	40	Multiaxial force platform 3-D Motion analysis system	It is used for PC	NA	NA	NA
4	Regenerative and Rehabilitative Medicine Lab	40	RT-PCR, ELISA plate reader	It is used for PC	NA	NA	NA
5	Intelligent Biosensors and Microsystems Lab	40	uStat-i 400 Biopotentiostat, ELGA Purelab, Powerlab15T	It is used for PC	NA	NA	NA
6	Biofluid Dynamics Lab	40	Viscometer, Gut Bioreactor,	It is used for PC	NA	NA	NA
7	Biodesign and Medical Devices Laboratory	40	3D FDM printer, electrospinning apparatus, laser engraver, spin coater, UV-Ozone plasma cleaner, etc.	It is used for PC	NA	NA	NA
8	Biomedical Image Processing lab	40	Workstations, image processing softwares	It is used for PC	NA	NA	NA
9	Optical Biomedical Microsystem laboratory	40	Optical tables, High speed camera, 3D printers, optomechanical accessories	It is used for PC	NA	NA	NA
10	Gene Manipulation Laboratory	40	Gradient thermo cycler, Semi-Dry Western Blot, Horizontal gel electrophoresis units , PAGE units , etc.	It is used for PC	NA	NA	NA

11	Bioinformatics Laboratory	40	VLife MDS suite software, Desktop system (22 Nos.), Servers (3 Nos.), Multi-functional printer, (1 No.)	It is used for PC	NA	NA	NA
12	Smart Agriculture Lab	40	Pieco Instruments Pvt. Ltd. TW/LAB/PYRO/1000, Twin Engineers Microprocessor Flame photometer	It is used for PC	NA	NA	NA
13	Integrative Tissue Engineering Laboratory	40	ZHJH-C2112B, Clean bench MIDI 40 (Thermoscientific) &Galaxy 170S New Brunswick	It is used for PC	NA	NA	NA
14	Proteomics and Protein Engineering Lab	40	Fluorescence Spectrophotometer, PCR, Probe Sonicator, shaker incubator, laminar flow cabinet	It is used for PC	NA	NA	NA
15	Anatomy and Physiology lab	40	Human patient simulator	It is used for PC	Pramodini Sahoo	Technical Staff	NA
16	Biomaterials & Tissue Engineering Lab	40	Universal Mechanical Tester, Viscometer Electrospinning HPLC Surface tensiometer Freeze	It is used for PC	Rabindra Kumar Mohar	Technical Staff	B.Tech
17	Soft tissue biomechanics lab	40	Syringe pump, Oven Incubator	It is used for PC	Chittaranjan Bhoi	Technical Staff	B.Tech
18	Stem Cell Lab	40	Flow cytometer Cell Sorter Real time PCR Animal cell culture facility Programmable Control Rate	It is used for PC	Susanta Pradhan	Technical Staff	B.Tech
19	Biomechanics & Biotransport Lab	40	Reynolds apparatus, bernoullis apparatus, Orificemeter, venturimeter, Pitot tube, steady state	It is used for PC	Chittaranjan Bhoi	Technical Staff	B.Tech
20	Intelligent Biosensors and Microsystems Lab	40	uStat-i 400 Biopotentiostat, ELGA Purelab, Powerlab15T	It is used for PC	NA	NA	NA
21	Phytopharmaceutical Bioprocessing Lab	40	In-house Plant growth chamber, orbital shaker with extended tray,	It is used for PC	NA	NA	NA
22	Environmental Biotechnology & Genomics Laboratory	40	DNA amplification, DNA/Protein image analysis, Microbial culture	It is used for PC	Bikram Kumar Nayak	Technical Staff	PhD
23	Bioprocess Engineering	40	Incubator shaker, Spectrophotometer, Laminar flow chamber, Water bath, Centrifuge, Distillation unit,	It is used for PC	Aayush Kumar	Technical Staff	10+2
24	Environmental Biotechnology & Agriculture Laboratory	40	Bioreactor, Incubator shaker, Spectrophotometer, Laminar flow chamber, Water bath, Centrifuge,	It is used for PC	NA	NA	NA

## D2. Safety Measures in Laboratories

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

Sr. No	Laboratory Name	Safety Measures
1	Medical Electronics and Instrumentation Laboratory I & II	Electrical safety guidelines followed and highlighted in the form of poster

2	Biomimetics Laboratory	Material safety guidelines followed and highlighted in the form of poster
3	Applied Biomechanics Lab	Mechanical and electrical safety guidelines followed and highlighted in the form of poster
4	Regenerative and Rehabilitative Medicine Lab	Material safety guidelines followed and highlighted in the form of poster
5	Anatomy and Physiology Lab	Biological and material safety guidelines followed and highlighted in the form of poster
6	Biomaterials & Tissue Engineering Lab	Material and biological safety guidelines followed and highlighted in the form of poster
7	Soft Tissue Biomechanics Lab	Material safety guidelines followed and highlighted in the form of poster
8	Stem Cell Lab	Biological safety guidelines followed and highlighted in the form of poster
9	Biomechanics & Biotransport Lab	Mechanical and electrical safety guidelines followed and highlighted in the form of poster
10	Intelligent Biosensors and Microsystems Lab	Electrical and chemical safety guidelines followed and highlighted in the form of poster
11	Biofluid Dynamics Lab	Mechanical and electrical safety guidelines followed and highlighted in the form of poster
12	Biodesign and Medical Devices Laboratory	Mechanical and material safety guidelines followed and highlighted in the form of poster

13	Biomedical Image Processing Lab	Electrical safety guidelines followed and highlighted in the form of poster
14	Optical Biomedical Microsystem Laboratory	Optical and electrical safety guidelines followed and highlighted in the form of poster
15	Gene Manipulation Laboratory	Biological and chemical safety guidelines followed and highlighted in the form of poster
16	Bioinformatics Laboratory	Electrical and ergonomic safety guidelines followed and highlighted in the form of poster
17	Smart Agriculture Lab	Chemical and electrical safety guidelines followed and highlighted in the form of poster
18	Integrative Tissue Engineering Laboratory	Biological and material safety guidelines followed and highlighted in the form of poster
19	Proteomics and Protein Engineering Lab	Chemical and electrical safety guidelines followed and highlighted in the form of poster
20	Intelligent Biosensors and Microsystems Lab (Advanced)	Electrical and chemical safety guidelines followed and highlighted in the form of poster
21	Phytopharmaceutical Bioprocessing Lab	Biological and chemical safety guidelines followed and highlighted in the form of poster
22	Environmental Biotechnology & Genomics Laboratory	Biological and chemical safety guidelines followed and highlighted in the form of poster
23	Bioprocess Engineering Laboratory	Mechanical and chemical safety guidelines followed and highlighted in the form of poster



SDGs	0	0	0	0	0	0	0	0
Entrepreneurship	0	0	0	0	0	0	0	0
Others, specify	11208.00	125.23	11442.06	10336.21	10542.45	10369.44	8601.5	8522.86
<b>Total</b>	<b>33305.60</b>	<b>427.58</b>	<b>30558.62</b>	<b>29452.77</b>	<b>28513.66</b>	<b>28137.57</b>	<b>23633.95</b>	<b>22325.45</b>

### 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 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	Budgeted in 2021-2022	Actual Expenses in 2021-2022 till
Laboratory equipment	0	0	0	0	0	0	0	0
Software	0	0	0	0	0	0	0	0
SDGs	0	0	0	0	0	0	0	0
Support for faculty development	0	0	0	0	0	0	0	0
R & D	5	5	3.75	3.75	2.31	2.31	2.66	2.66
Industrial Training, Industry expert, Internship	0	0	0	0	0	0	0	0
Miscellaneous Expenses*	2.5	3.99	2.25	1.7	2.69	2.48	2.84	1.67
<b>Total</b>	<b>7.5</b>	<b>8.99</b>	<b>6.00</b>	<b>5.45</b>	<b>5.00</b>	<b>4.79</b>	<b>5.50</b>	<b>4.33</b>