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

| | |
|---|---|
| **Program Name** : Biotechnology | **Discipline**: Engineering & Technology |
| **Level** : Under Graduate | **Tier**: 1 |
| **Application No**: 9496 | **Date of Submission**: 06-02-2025 |

# PART A- Profile of the Institute

| | |
|---|---|
| **A1.Name of the Institute**: BIRLA INSTITUTE OF TECHNOLOGY | |
| Year of Establishment : 1955 | Location of the Institute: RANCHI, JHARKHAND |
| **A2. Institute Address**:BIRLA INSTITUTE OF TECHNOLOGY, MESRA | |
| City:Ranchi | State:Jharkhand |
| Pin Code:835215 | Website:www.bitmesra.ac.in |
| Email:vc@bitmesra.ac.in | Phone No(with STD Code):0651-2276016 |
| **A3. Name and Address of the Affiliating University (if any)**: | |
| Name of the University : NIL | City: Ranchi |
| State : Jharkhand | Pin Code: 835215 |
| **A4. Type of the Institution**: Deemed University | |
| **A5. Ownership Status**: Self financing | |

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

- No. of UG programs: **14**
- No. of PG programs: **18**

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 | 1993 | -- | Architecture |
| 2 | Computer Application | PG | Master of Computer Application | 1984 | -- | Computer Application |
| 3 | Engineering & Technology | PG | Aerospace Engineering | 1968 | -- | Space Engineering |
| 4 | Engineering & Technology | UG | Artificial Intelligence and Machine Learning | 2022 | -- | Computer Science and Engineering |
| 5 | Engineering & Technology | Diploma | Automobile Engineering | 2001 | -- | Mechanical Engineering |
| 6 | Engineering & Technology | UG | Biotechnology | 2002 | -- | Biotechnology |
| 7 | Engineering & Technology | PG | Biotechnology | 2010 | -- | Biotechnology |
| 8 | Engineering & Technology | UG | Chemical Engineering | 2011 | -- | Chemical Engineering |
| 9 | Engineering & Technology | UG | Chemical Engineering ( Plastic & Polymer) | 2011 | 2020 | Chemical Engineering |
| 10 | Engineering & Technology | PG | Civil Engineering | 2024 | -- | Civil Engineering |
| 11 | Engineering & Technology | UG | Civil Engineering | 1957 | -- | Civil Engineering |
| 12 | Engineering & Technology | Diploma | Computer Engineering | 2002 | -- | Computer Science and Engineering |
| 13 | Engineering & Technology | UG | Computer Science and Engineering | 1983 | -- | Computer Science and Engineering |
| 14 | Engineering & Technology | PG | Computer Science and Engineering | 1999 | -- | Computer Science and Engineering |
| 15 | Engineering & Technology | PG | Computer Science and Engineering (Artificial Intelligence and Machine Learning) | 2021 | -- | Computer Science and Engineering |

| 16 | Engineering & Technology | UG | Electrical & Electronics Engineering | 1965 | -- | Electrical and Electronics Engineering |
|----|--------------------------|----|--------------------------------------|------|----|----------------------------------------|
| 17 | Engineering & Technology | Diploma | Electrical and Electronics Engineering | 2010 | -- | Electrical and Electronics Engineering |
| 18 | Engineering & Technology | PG | Electrical and Electronics Engineering | 1964 | -- | Electrical and Electronics Engineering |
| 19 | Engineering & Technology | PG | Electronics & Communication Engineering | 1965 | -- | Electronics and Communication Engineering |
| 20 | Engineering & Technology | Diploma | Electronics & Communication Engineering | 2001 | -- | Electronics and Communication Engineering |
| 21 | Engineering & Technology | UG | Electronics & Communication Engineering | 1960 | -- | Electronics and Communication Engineering |
| 22 | Engineering & Technology | UG | Food Engineering and Technology | 2023 | -- | Chemical Engineering |
| 23 | Engineering & Technology | UG | Mechanical Engineering | 1955 | -- | Mechanical Engineering |
| 24 | Engineering & Technology | Diploma | Mechanical Engineering | 2010 | -- | Mechanical Engineering |
| 25 | Engineering & Technology | PG | Mechanical Engineering | 1964 | -- | Mechanical Engineering |
| 26 | Engineering & Technology | UG | Production & Industrial Engineering | 1964 | -- | Production and Industrial Engineering |
| 27 | Engineering & Technology | PG | Production and Industrial Engineering | 1992 | -- | Production and Industrial Engineering |
| 28 | Engineering & Technology | PG | Remote Sensing | 1997 | -- | Remote Sensing |
| 29 | Engineering & Technology | PG | Urban Planning | 2007 | -- | Urban Planning |
| 30 | Hotel Management | UG | Hotel Management & Catering Technology | 2003 | -- | Hotel Management |
| 31 | Management | PG | Master of Business Administration | 1980 | -- | Management |
| 32 | Pharmacy | PG | Pharmaceutical Chemistry | 1983 | -- | Pharmacy |
| 33 | Pharmacy | PG | Pharmaceutical Quality Assurance | 2011 | -- | Pharmacy |
| 34 | Pharmacy | PG | Pharmaceutics | 1983 | -- | Pharmacy |
| 35 | Pharmacy | PG | Pharmacognosy | 1998 | -- | Pharmacy |
| 36 | Pharmacy | PG | Pharmacology | 1998 | -- | Pharmacy |
| 37 | Pharmacy | UG | Pharmacy | 1972 | -- | Pharmacy |

**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 |
|------------------------|---------------------------|---------------------|---------------|
| Biotechnology | No | Biotechnology | 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/COMP AUTHORITY ARROVAL D |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Biotechnology | UG | 2002 / -- | 60 | No | NA | 60 | 2002 | AICTE |

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 : | Dr Kunal Mukhopadhyay |
|---|---|
| B. Nature of appointment: | Regular |
| C. Qualification: | M.Sc. and PhD |

**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) | 2023-24 (CAY) | 2022-23 (CAYm1) | 2021-22 (CAYm2) | 2020-21 (CAYm3) | 2019-20 (CAYm4) | 2018-19 (CAYm5) | 2017-18 (CAYm6) |
|---|---|---|---|---|---|---|---|
| N=Sanctioned intake of the program (as per AICTE /Competent authority) | 60 | 60 | 60 | 60 | 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 | 53 | 37 | 22 | 40 | 27 | 28 | 25 |
| 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. | 53 | 37 | 22 | 40 | 27 | 28 | 25 |

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] |
|---|---|---|---|---|
| 2023-24 (CAY) | 60 | 0 | 0 | 88.33 |
| 2022-23 (CAYm1) | 60 | 0 | 0 | 61.67 |
| 2021-22 (CAYm2) | 60 | 0 | 0 | 36.67 |

Average [ (ER1 + ER2 + ER3) / 3 ] = 62.22≡ 11.00

**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 | (2019-20) LYG | (2018-19) LYGm1 | (2017-18) 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). | 27.00 | 28.00 | 25.00 |
| B=No. of students who graduated from the program in the stipulated course duration | 20.00 | 18.00 | 23.00 |

<div align="center">Average SR of three batches ((SR_1+ SR_2+ SR_3)/3): 79.45</div>

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

<div align="center">Table No.B6.1: Academic Performance of the First-Year Students of the Program.</div>

| Academic Performance | CAYm1( 2022-23 ) | CAYm2( 2021-22 ) | CAYm3 ( 2020-21 ) |
|---|---|---|---|
| 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) | 6.48 | 7.36 | 8.61 |
| Y=Total no. of successful students | 37.00 | 22.00 | 37.00 |
| Z=Total no. of students appeared in the examination | 37.00 | 22.00 | 40.00 |
| API [X*(Y/Z)] | 6.48 | 7.36 | 7.96 |

<div align="center">Average API[ (AP1+AP2+AP3)/3 ] : 7.27</div>

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

<div align="center">Table No.B7.1: Academic Performance of the Second Year Students of the Program.</div>

| Academic Performance | CAYm1 ( 2022-23 ) | CAYm2 ( 2021-22 ) | CAYm3 ( 2020-21 ) |
|---|---|---|---|
| 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 2nd year/10) | 7.24 | 7.50 | 9.01 |
| Y=Total no. of successful students | 22.00 | 33.00 | 20.00 |
| Z=Total no. of students appeared in the examination | 22.00 | 37.00 | 27.00 |
| API [ X * (Y/Z) ] | 7.24 | 6.69 | 6.67 |

<div align="center">Average API [ (AP1 + AP2 + AP3)/3 ] : 6.87</div>

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

<div align="center">Table No.B8.1: Academic Performance of the Third Year Students of the Program</div>

| Academic Performance | CAYm1 (2022-23) | CAYm2 (2021-22) | CAYm3 (2020-21) |
|---|---|---|---|
| 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) | 6.61 | 8.35 | 9.10 |
| Y=Total no. of successful students | 32.00 | 20.00 | 18.00 |
| Z=Total no. of students appeared in the examination | 33.00 | 20.00 | 28.00 |
| API [ X*(Y/Z) ]: | 6.41 | 8.35 | 5.85 |

<div align="center">Average API [ (AP1 + AP2 + AP3)/3 ] :  6.87</div>

## B9. Placement, Higher Studies, and Entrepreneurship

<div align="center">Table No.B9.1: Placement, higher studies, and entrepreneurship details.</div>

| Item | LYG (2019-20) | LYGm1(2018-19) | LYGm2(2017-18) |
|---|---|---|---|
| FS*=Total no. of final year students | 60.00 | 60.00 | 60.00 |
| X=No. of students placed | 9.00 | 11.00 | 12.00 |
| Y=No. of students admitted to higher studies | 1.00 | 5.00 | 5.00 |
| Z=Total no. of students appeared in the examination | 20.00 | 18.00 | 23.00 |
| Placement Index(P) = (((X + Y + Z)/FS) * 100): | 50.00 | 56.67 | 66.67 |

<div align="center">Average Placement Index = (P_1 + P_2 + P_3)/3:  57.78 Placement Index Points:</div>

# 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

<div align="center">Table No.C1: Faculty details in the Department for the past 3 years including CAY</div>

| 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 Designat as Professo as Professo Associat Professo if any |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Dr Kunal Mukhopadhyay | XXXXXXX80D | XXXXXXXXXXXPhD | Calcutta | Plant Biotechnology | 10/07/2003 | 21.6 | Assistant Professor | Professor | 01/04/20 |
| 2 | Dr Padmini Padmanabhan | XXXXXXX00A | XXXXXXXXXXXXXXXXPhD | IIT MADRAS | Bioprocess Engineering | 08/08/2007 | 17.5 | Professor | Professor | 08/08/20 |
| 3 | Dr Ramesh Chandra | XXXXXXX54H | XXXXXXXXXXXXXXXXPhD | BIT Mesra | Secondary Metabolites, Mushrooms, Enzyme & Bioprocess Technology | 01/07/1996 | 28.7 | Assistant Professor | Professor | 01/06/20 |
| 4 | Dr Rakesh Kumar Sinha | XXXXXXX55R | XXXXXXXXXXXPhD | IIT BHU | Biomedical Engineering | 05/05/2003 | 21.9 | Assistant Professor | Professor | 01/06/20 |
| 5 | Dr Vinod Kumar Nigam | XXXXXXX89L | XXXXXXXXXXXPhD | IIT BHU | Biochemical Engineering | 01/08/2009 | 15.6 | Associate Professor | Professor | 02/01/20 |
| 6 | Dr Dev Mani Pandey | XXXXXXX49M | XXXXXXXXXXXPhD | CCS Haryana Agricultural University, Hisar, Haryana, India | Molecular Plant Physiology | 08/01/2007 | 18 | Assistant Professor | Professor | 02/09/20 |
| 7 | Dr Manish Kumar | XXXXXXX88B | XXXXXXXXXXXPhD | Ranchi University | Molecular Biology, Chromatography & Mass Spectrometry | 01/06/2007 | 17.8 | Assistant Professor | Professor | 02/09/20 |
| 8 | Dr Raju Poddar | XXXXXXX02D | XXXXXXXXXXXXXXPhD | BIT Mesra | Biomedical Optics, Biophysics | 01/01/2007 | 18.1 | Assistant Professor | Professor | 02/09/20 |
| 9 | Dr Shashwati Ghosh Sachan | XXXXXXX10N | XXXXXXXXXXXPhD | IIT Kharagpur | Microbial Biotechnology | 12/07/2007 | 17.6 | Assistant Professor | Associate Professor | 02/08/20 |
| 10 | Dr Sheela Chandra | XXXXXXX00B | XXXXXXXXXXXPhD | Ranchi University | Plant Biotechnology, Plant Microbe Interaction | 01/07/2008 | 16.7 | Assistant Professor | Associate Professor | 02/09/20 |
| 11 | Dr Hare Ram Singh | XXXXXXX57E | XXXXXXXXXXXPhD | Veer Kunwar Singh University, Ara | Reproductive Physiology, Entamology | 16/07/2010 | 14.6 | Assistant Professor | Assistant Professor | |
| 12 | Dr Yogender Aggarwal | XXXXXXX56F | XXXXXXXXXXXPhD | BIT Mesra | Biomedical Engineering | 25/07/2012 | 12.6 | Assistant Professor | Assistant Professor | |
| 13 | Dr Shubha Rani Sharma | XXXXXXX14Q | XXXXXXXXXXXPhD | BIT Mesra | Medical and environmental microbiology, Gallstone and gallbladder area | 01/01/2014 | 11.1 | Assistant Professor | Assistant Professor | |
| 14 | Dr Anjana Dwivedi | XXXXXXX15D | XXXXXXXXXXXPhD | BIT Mesra | Systems Biology, Biomedical Instrumentation | 11/03/2014 | 10.10 | Assistant Professor | Assistant Professor | |
| 15 | Dr Koel De Mukherjee | XXXXXXX64H | XXXXXXXXXXXXXXXXPhD | BIT Mesra | Bioinformatics, Nanobiotechnology | 18/09/2009 | 15.4 | Assistant Professor | Assistant Professor | |
| 16 | Dr Sneha Singh | XXXXXXX12B | XXXXXXXXXXXPhD | BIT Mesra | Nanobiotechnology | 22/06/2016 | 8.7 | Assistant Professor | Assistant Professor | |
| 17 | Dr Dinesh Prasad | XXXXXXX07R | XXXXXXXXXXXPhD | BIT Mesra | Biotechnology | 01/10/2011 | 13.4 | Assistant Professor | Assistant Professor | |
| 18 | Dr Muthu Kumar Sampath | XXXXXXX59F | XXXXXXXXXXXXXXXXPhD | IIT Delhi | Bioprocess and Bioseparations Engineering | 01/09/2016 | 8.5 | Assistant Professor | Assistant Professor | |
| 19 | Dr Soham Chattopadhyay | XXXXXXX22C | XXXXXXXXXXXXXXXXPhD | IIT Kharagpur | Biosensing and Bioremediation | 11/07/2016 | 8.6 | Assistant Professor | Assistant Professor | |

| 20 | Dr Alok Jain | XXXXXXX25J | XXXXXXXXXXXXPhD | IIT Kanpur | Computational Biology | 23/08/2021 | 3.5 | Assistant Professor | Assistant Professor | |

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 Department1
Table No.C2.1: Student-faculty ratio.

| Description | CAY(2023-24) | CAYm1 (2022-23) | CAYm2 (2021-22) |
|---|---|---|---|
| UG1.B | 60 | 60 | 60 |
| UG1.C | 60 | 60 | 60 |
| UG1.D | 60 | 60 | 60 |
| **UG1: Biotechnology** | **180** | **180** | **180** |
| PG1.A | 18 | 18 | 18 |
| PG1.B | 18 | 18 | 18 |
| **PG1: Biotechnology** | **36** | **36** | **36** |
| DS=Total no. of students in all UG and PG programs in the Department | 216 | 216 | 216 |
| 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=** 216 | **S2=** 216 | **S3=** 216 |
| DF=Total no. of faculty members in the Department | 20 | 20 | 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) | **F1=** 20 | **F2=** 20 | **F3=** 20 |
| 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= 10.80** | **SFR2= 10.80** | **SFR3= 10.80** |
| Average SFR for 3 years | **SFR= 10.80** | | |

## 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 )] |
|---|---|---|---|---|
| 2023-24(CAY) | 20 | 13 | 10.00 | 63.00 |
| 2022-23(CAYm1) | 20 | 13 | 10.00 | 63.00 |
| 2021-22(CAYm2) | 20 | 13 | 10.00 | 63.00 |

## 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 |
| 2023-24 | 1.00 | 5.00 | 2.00 | 4.00 | 7.00 | 17.00 |
| 2022-23 | 1.00 | 4.00 | 2.00 | 5.00 | 7.00 | 17.00 |
| 2021-22 | 1.00 | 4.00 | 2.00 | 5.00 | 7.00 | 17.00 |
| Average | RF1=1.00 | AF1=4.33 | RF2=2.00 | AF2=4.67 | RF2=7.00 | AF2=17.00 |

## 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 | 2022-23 (CAYm1) | 2021-22 (CAYm2) | 2020-21 (CAYm3) |
|---|---|---|---|---|
| 1 | No. of peer reviewed journal papers published | 51 | 48 | 60 |
| 2 | No. of peer reviewed conference papers published | 0 | 0 | 0 |
| 3 | No. of books/book chapters published | 11 | 23 | 20 |

## C7. Sponsored Research Project

Table No. C7.1: List of sponsored research 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 |
|---|---|---|---|---|---|---|
| Dr. M K Sampath | | Dept. of Bioengineering and Biotechnology | Continuous nanofiltration for the virus removal in biopharmaceutical production process | SERB | 3 months | 10.72 |
| Dr. Raju Poddar | | Dept. of Bioengineering and Biotechnology | Indigenous development of low-cost AI enabled portable multispectral camera system for rapid early detection of plant diseases and other stress based morphological changes | DST-NMICPS; TIH – ISI | 3 Years | 7.81 |
| | | | | | | Amount received (Rs.):18.53 |

**(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 |
|---|---|---|---|---|---|---|
| Dr. D. M. Pandey | | Dept. of Bioengineering and Biotechnology | Identification of the most active cocoonase of sericigenous insects through molecular characterization | DBT | 3 Years | 18.94 |
| Dr. Sneha Singh | Dr. Ashok Kumar, IIT Kanpur; Dr. Dilip Kumar Singh, BIT Mesra | Dept. of Bioengineering and Biotechnology | Self-fitting 4D-Printed Smart Scaffolds with Efficient Bone Regenerative Potential | SERB | 3 Years and 6 Months | 67.17 |
| Dr. Raju Poddar | Dr. Vinod Kumar Nigam | Dept. of Bioengineering and Biotechnology | Indigenous development of low-cost, portable, high-speed confocal Scanning Laser Ophthalmoscopy (cSLO) system for fluorescence angiographic and photoreceptors imaging of human eye | ICMR | 3 Years | 38.72 |
| | | | | | | Amount received (Rs.):124.83 |

**Total Amount (Lacs) Received for the Past 3 Years:  143.36**

**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 | Biochemistry lab | 30 | Magnetic Stirrers, Weighing Balances, pH meter, Microscope, Autoclave, Hot plate, Incubator | 24 h BE204R1 | NA | NA | NA |
| 2 | Microbiology lab | 30 | Semi-Automatic Microtome, Weighing Balances, Microscope, pH meter, Colony Counter, Mini | 12 h BE211 Mi | NA | NA | NA |
| 3 | Molecular Biology lab | 30 | Sonicator, Refrigerator, Water purification unit, Ice maker, Autoclave, Waterbath, Microwave | 24 h BE305 Mc | NA | NA | NA |

| 4 | Bioprocess Engineering Lab | 30 | Magnetic Stirrer, Mini Spin, Microscope, Minimate TFF System and Master flow pump | 24 h BE310 Bio | Mr Arvind Kur | Technical Sup | B.Tech. |
| 5 | Molecular Plant Physiology Lab | 30 | Conductivity Meter, Gel Doc, PCR, Centrifuge, Gel Electrophoresis, pH Meter, Microwave, Weighing | 12 h BE404 Pla | NA | NA | NA |
| 6 | Plant Tissue Culture lab | 30 | Particle Acceleration Apparatus, Laminar Flow, Incubator Shaker, Hot Plate, Moisture Controlled Air | 12 h BE404 Pla | NA | NA | NA |
| 7 | Bioinformatics and Computational Biology | 30 | Desktop (30), Superprodesigner, Autodock, Schrodinger, Avogadro Modeller | 24 h BE400 Re | NA | NA | NA |
| 8 | Analytical Instrumentation Lab | 30 | HPLC, Gas Chromatography, UPLC, Chromatography system, HPLC, Deep freezer, Microwave | 12 h BE306 Bio | NA | NA | NA |
| 9 | UG Lab 1 | 30 | Microscopes, Water Bath, Refrigerated Incubator, Refrigerators, Autoclaves | 15 h BE211 Mic | NA | NA | NA |
| 10 | UG Lab 2 | 30 | Orbital Shaker Incubator, Shaking Incubator, Hot Air Oven, UV/Vis Spectrophotometer, Magnetic | 15 h BE306 Bio | NA | NA | NA |
| 11 | PG Lab1 | 30 | Incubator Shaker, UV-Spectrophotometer, Image Eraser, Fermenters, Chiller | 15 h BE207 Ce | NA | NA | NA |
| 12 | Pilot plant and Bioseparation Engineering | 30 | Rotary Dryer, Fluidized Bed Dryer Computer Controlled Heat Exchanger, Plate & Frame Filter | 15 h BE311 Ma | Mr. Arvind Ku | Technical Sup | B.Tech. |
| 13 | PG lab 2 | 30 | Incubator Shaker, UV-Spectrophotometer, Image Eraser, Fermenters, Chiller | 12 h BE310 Bio | NA | NA | NA |
| 14 | Biomedical instrumentation lab | 30 | TLC, Tread Mill, Stereotaxic Weighing Balance, B.O.D Incubator Refrigerator (-20) | 12 Hours BT42 | 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 | Biochemistry Lab | Chemical Safety: Read labels and Safety Data Sheets (SDS) before using any chemical. Store chemicals according to compatibility groups. Handle acids, bases, and solvents with extreme care—use a fume hood when necessary. Emergency Preparedness: Know the locations of Emergency exits and Eyewash stations and safety showers. |
| 2 | Microbiology Lab | 1. Laminar air flow units are provided with flame ignitors to prevent any fire accidents. 2. Sink with soap solution and 70% ethanol is provided in the laboratory. 3. Separate containers are kept for discarding used biohazard materials, broken glassware and other un-contaminated things. |
| 3 | Molecular Biology Lab | 1. Gloves and other personal protective equipment are provided to students wherever applicable. 2. Safety goggles are provided. 3. Gels are discarded with appropriate safety measures. |
| 4 | Bioprocess Engineering Lab | 1. Waste Management: Segregate and label chemical and biological waste. Do not dispose of chemicals or biologicals down the sink unless allowed. 2. Always label samples, reagents, and waste properly. 3. Inspect equipment for damage before use. |
| 5 | Molecular plant physiology Laboratory | Always wear a lab coat, gloves, and safety goggles when working with chemicals or biological materials. Use mask or face shield when handling fine powders (e.g., lyophilized enzymes) or aerosols. |
| 6 | Plant tissue culture Lab | Read SDS (Safety Data Sheets) before using buffers, reagents, or staining solutions (e.g., ethidium bromide, phenol, chloroform). Handle hazardous chemicals, strong acids/bases) in a fume hood. • Always wear a lab coat, gloves, and safety goggles when working with chemicals or biological materials. |
| 7 | Bioinformatics Lab | 1. The electrical connection has been checked thoroughly 2. The Monitor is provided with safety glass to reduce the radiation. 3. There is a thorough check in earth connection |

| 8 | Analytical Instrumentation Lab | 1. The whole laboratory is air-conditioned to provide a dust free environment 2. All the instruments are provided with standard operating procedure. 3. Sink with soap solution and 70% ethanol is provided in the adjourning laboratories. 4. Gas valves of cylinders are monitored for the pressure regularly |
|---|---|---|
| 9 | UG and PG Labs | General Lab Rules: Always wear lab coat, gloves, and safety goggles. Wash hands before and after experiments. Maintain a clean and organized workspace. Chemical Safety: Read labels and SDS (Safety Data Sheets) before using any chemical. Handle acids, bases, and organic solvents with caution. |
| 10 | Pilot plant and Bioseparation Engineering lab | • Read SDS (Safety Data Sheets) before using buffers, reagents, or staining solutions (e.g., ethidium bromide, phenol, chloroform). Handle hazardous chemicals, strong acids/bases) in a fume hood. • Always wear a lab coat, gloves, and safety goggles when working with chemicals or biological materials. |
| 11 | General safety measures | 1. The First aid box and fire extinguisher are placed in the Lab at easily reachable positions. 2. 70% ethanol is kept in sufficient quantities in the laboratory for disinfection. 3. Water tap and sink with disinfection soap is kept in all the laboratories. 4. The students asked not to wear watches, bracelets, ring or bangles in their hand for safety precaution. 5. Dedicated recycle bins with paper covers with different color codes are placed in laboratories wherever applicable. 6. The students are asked to wear only leather shoes before entering their lab. 7. The electrical connection has been checked thoroughly (i.e. properly insulated) before starting each and every experiment. 8. The ambulance van is readily available in the campus for 24X7. 9. The mobile number display board for the ambulance van is mounted on the wall. 10. The instruments are arranged in well placed manner for proper ventilation. 11. Trained Technician takes care of the maintenance of the all equipment. 12. For avoiding fire all the Electric extension boards must be kept away from water source. 13. The students are instructed to switch off the main supply of the instrument before leaving the place. |

**D3. Project Laboratory/Research Laboratory**

| Name of the Laboratory |
|---|
| 1 Center of Excellence (COE) under TEQIP, PHASE II sponsored by world bank |
| 2 BTISnet SubDIC Bioinformatics center sponsored by the Department of Biotechnology, Government of India |
| 3 UG/PG project lab -20 desktops |

# 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 |
|---|---|---|---|---|---|
| 2021-22(CAYm2) | 780 | 39 | 12 | 11 | 30 |
| 2022-23(CAYm1) | 840 | 42 | 14 | 16 | 34 |
| 2023-24(CAY) | 930 | 46 | 14 | 17 | 32 |

**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 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 |
|---|---|---|---|---|---|---|---|---|
| Infrastructure Built-Up | 1119478000 | 268553000 | 641154000 | 250058000 | 850384000 | 158624000 | 631027000 | 180611000 |

| Item | Col1 | Col2 | Col3 | Col4 | Col5 | Col6 | Col7 | Col8 |
|---|---|---|---|---|---|---|---|---|
| Library | 27967000 | 11832000 | 22582000 | 20444000 | 20592000 | 15608000 | 18191000 | 12249000 |
| Laboratory equipment | 250363000 | 114579000 | 211627000 | 57947000 | 169975000 | 40315000 | 89528000 | 27249000 |
| Teaching and non-teaching staff | 1314119000 | 1332191000 | 1175614000 | 1116461000 | 1116456000 | 1000523000 | 905033000 | 867924000 |
| Outreach Programs | 10500000 | 5323000 | 0 | 0 | 0 | 0 | 0 | 0 |
| R&D | 65500000 | 37128000 | 91172000 | 41288000 | 122967000 | 38576000 | 74810000 | 21262000 |
| Training, Placement and | 10025000 | 4907000 | 7000000 | 3544000 | 2000000 | 1150000 | 11895000 | 433000 |
| SDGs | 30141000 | 18763000 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entrepreneurship | 5150000 | 1718000 | 0 | 0 | 0 | 0 | 0 | 0 |
| Others, specify | 563743000 | 424019000 | 401842000 | 345846000 | 372435000 | 271011000 | 365235000 | 206247000 |
| **Total** | **3396986000** | **2219013000** | **2550991000** | **1835588000** | **2654809000** | **1525807000** | **2095719000** | **1315975000** |

**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 | 6925000 | 6992000 | 5340000 | 928000 | 3275000 | 2130000 | 2683000 | 155000 |
| Software | 2975000 | 3146000 | 690000 | 697000 | 1350000 | 610000 | 220000 | 14000 |
| SDGs | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Support for faculty | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| R & D | 4500000 | 4201000 | 3550000 | 2936000 | 2800000 | 2673000 | 2050000 | 1627000 |
| Industrial Training, Industry | 200000 | 164000 | 100000 | 45000 | 50000 | 0 | 50000 | 3000 |
| Miscellaneous Expenses* | 3150000 | 2544000 | 4880000 | 1501000 | 2480000 | 2366000 | 2486000 | 0437000 |
| **Total** | **17750000** | **17047000** | **14560000** | **6107000** | **9955000** | **7779000** | **7489000** | **2236000** |