

NATIONAL BOARD OF ACCREDITATION

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 : 10910	Date of Submission : 22-08-2025

PART A- Profile of the Institute

A1.Name of the Institute: Vels Institute of Science, Technology and Advanced Studies(VISTAS),	
Year of Establishment : 2008	Location of the Institute: Pallavaram
A2. Institute Address: Velan Nagar, P.V.Vaithiyalingam Road, Pallavaram, Chennai	
City:Kancheepuram	State:Tamil Nadu
Pin Code:600117	Website:www.velsuniv.ac.in
Email:vistas@velsuniv.org	Phone No(with STD Code):044-22662501
A3. Name and Address of the Affiliating University (if any):	
Name of the University :	City: Kancheepuram
State : Tamil Nadu	Pin Code: 600117
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: **19**
- No. of PG programs: **12**

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	Computer Application	PG	Master in Computer Applications	2008	--	Computer Application
2	Engineering & Technology	UG	Artificial Intelligence and Data Science	2021	--	Computer Science and Engineering (Data Science)
3	Engineering & Technology	UG	Automation & Robotics	2022	2024	Mechanical Engineering
4	Engineering & Technology	UG	Automobile Engineering	2012	2025	Automobile Engineering
5	Engineering & Technology	PG	Automobile Engineering	2013	2025	Automobile Engineering
6	Engineering & Technology	UG	Biomedical Engineering	2015	--	Biomedical Engineering
7	Engineering & Technology	UG	Biotechnology	2015	--	Biotechnology
8	Engineering & Technology	UG	Civil Engineering	2009	2025	Civil Engineering
9	Engineering & Technology	PG	Computer Integrated Manufacturing	2012	--	Mechanical Engineering
10	Engineering & Technology	UG	Computer Science and Engineering	2008	--	Computer Science and Engineering

11	Engineering & Technology	PG	Computer Science and Engineering	2009	--	Computer Science and Engineering
12	Engineering & Technology	UG	Computer Science and Engineering (Artificial Intelligence & Machine Learning)	2021	--	Computer Science and Engineering (Artificial Intelligence and Machine Learning)
13	Engineering & Technology	UG	Computer Science and Engineering (Artificial Intelligence)	2023	--	Computer Science and Engineering (Artificial Intelligence and Machine Learning)
14	Engineering & Technology	UG	Computer Science and Engineering (Data Science)	2025	--	Computer Science and Engineering (Data Science)
15	Engineering & Technology	PG	Construction Engineering & Management	2012	--	Civil Engineering
16	Engineering & Technology	UG	Electrical and Electronics Engineering	2009	--	Electrical and Electronics Engineering
17	Engineering & Technology	UG	Electronics & Communication Engineering	2008	--	Electronics and Communication Engineering
18	Engineering & Technology	UG	Electronics & Computer Engineering	2022	--	Electronics and Communication Engineering
19	Engineering & Technology	UG	Information Technology	2014	--	Computer Science and Engineering (Data Science)
20	Engineering & Technology	UG	Marine Engineering	2005	--	Marine Engineering
21	Engineering & Technology	UG	Mechanical Engineering	2009	--	Mechanical Engineering
22	Engineering & Technology	UG	Naval Architecture and Offshore Engineering	2015	--	Naval Architecture and Offshore Engineering
23	Engineering & Technology	UG	Petroleum Engineering	2015	2023	Petroleum Engineering
24	Engineering & Technology	UG	Robotics and Artificial Intelligence	2025	--	Mechanical Engineering
25	Engineering & Technology	PG	Structural Engineering	2025	--	Civil Engineering
26	Management	PG	Enterprenuership	2022	--	Management
27	Management	PG	Master of Business Administration	2008	--	Management
28	Management	PG	Master of Business Administration (Shipping and Logistics Management)	2008	--	Management
29	Management	PG	MBA Aviation Management	2024	--	Management
30	Management	PG	MBA Business Analytics	2016	--	Management
31	Management	PG	MBA Logistics Supply Chain Management	2009	--	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
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/COMPETENT AUTHORITY APPROVAL DETAILS	ACCREDITATION STATUS	FROM	TO	NO. OF TIMES PROGRAM ACCREDITED	PROGRAM DURATION
1	Biotechnology	UG	2015 / --	60	Yes	2023	30	2023	F.No. Southern/1-44638545381/2025/EOA	Applying first time	--	--	0	4

Sanctioned Intake for Last Five Years for the Biotechnology

Academic Year	Sanctioned Intake
2024-25	30
2023-24	30
2022-23	60
2021-22	60
2020-21	60
2019-20	60

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 P BRINDHA DEVI
B. Nature of appointment:	Regular
C. Qualification:	M.Tech and 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)	30	30	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	30	29	27	37	27	31	35
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.	30	29	27	37	27	31	35

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)	30	30	0	100.00
2023-24 (CAYm1)	30	29	0	96.67
2022-23 (CAYm2)	60	27	0	45.00

Average [(ER1 + ER2 + ER3) / 3] = 80.56≡ 17.00

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	(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).	60.00	60.00	60.00
B=No. of students who graduated from the program in the stipulated course duration	27.00	31.00	29.00

Average SR of three batches ((SR_1+ SR_2+ SR_3)/3): 48.33

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)	7.38	7.47	8.07
Y=Total no. of successful students	25.00	23.00	36.00
Z=Total no. of students appeared in the examination	27.00	24.00	37.00
API [X*(Y/Z)]	6.83	7.16	7.85

Average API[(AP1+AP2+AP3)/3] : 7.28

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 2nd year/10)	7.77	7.48	7.75
Y=Total no. of successful students	24.00	34.00	27.00
Z=Total no. of students appeared in the examination	23.00	33.00	27.00

API [X * (Y/Z)]	8.11	7.71	7.75
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Average API [(AP1 + AP2 + AP3)/3] : 7.86

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)	7.83	8.10	7.30
Y=Total no. of successful students	33.00	27.00	31.00
Z=Total no. of students appeared in the examination	34.00	27.00	31.00
API [X*(Y/Z)]:	7.60	8.10	7.30

Average API [(AP1 + AP2 + AP3)/3] : 7.67

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	60.00	60.00	60.00
X=No. of students placed	17.00	22.00	16.00
Y=No. of students admitted to higher studies	5.00	4.00	6.00
Z= No. of students taking up entrepreneurship	1.00	0.00	1.00
Placement Index(P) = ((X + Y + Z)/FS) * 100):	38.33	43.33	38.33

Average Placement Index = (P_1 + P_2 + P_3)/3: 40.00 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	Dr P BRINDHA DEVI	XXXXXXXX42L	M.Tech and Ph.D.	BITS PILANI	DRUG DISCOVERY, SYSTEMS BIOLOGY & ENVIRONMENTAL BIOTECHNOLOGY	08/06/2015	10.2	Assistant Professor	Associate Professor	16/08/2021	Regular	Yes		Yes

2	Dr. P. Vivek	XXXXXXXX20R	M.Tech and Ph.D.	Annamalai University	Environmental Biotechnology, Plant medicine, Biopharmaceutical Technology	02/07/2018	7.1	Assistant Professor	Associate Professor	04/01/2023	Regular	Yes		No
3	Dr. Ivo Romauld S	XXXXXXXX32B	M.Tech and Ph.D.	Madhyanchal Professional University	Environmental Biotechnology, Marine Biotechnology	02/07/2016	9.1	Assistant Professor	Associate Professor	27/08/2024	Regular	Yes		No
4	Dr. Meenambiga S S	XXXXXXXX33K	M.Tech and Ph.D.	VELS INSTITUTE OF SCIENCE TECHNOLOGY AND ADVANCED STUDIES	Mycology, Bioinformatics	03/07/2017	8.1	Assistant Professor	Assistant Professor		Regular	Yes		No
5	Dr. Sai Ramesh A	XXXXXXXX01F	MS and PhD	Vellore Institute of Technology, Vellore	Medical Biotechnology	02/07/2025	0.1	Assistant Professor	Assistant Professor		Regular	Yes		No
6	Mrs. Grace Vanathi M	XXXXXXXX29K	M.Tech	ANNA UNIVERSITY	Immunology	30/06/2025	0.1	Assistant Professor	Assistant Professor		Regular	Yes		No
7	R THIRUCHELVI	XXXXXXXX44Q	M.Tech	ANNA UNIVERSITY	ALGAL BIOTECHNOLOGY	03/07/2017	5.9	Assistant Professor	Assistant Professor		Regular	No	29/04/2023	No
8	Dr P SAKTHI SELVAN	XXXXXXXX81D	M.Tech and Ph.D.	ANNA UNIVERSITY	Biofuels	02/07/2018	6.10	Assistant Professor	Assistant Professor		Regular	No	30/05/2025	No
9	Dr G N Nirmala	XXXXXXXX91Q	Ph.D	SRM University	Animal biotechnology, Aquatic and Genetic toxicology.	24/02/2020	4.3	Associate Professor	Associate Professor		Regular	No	31/05/2024	No
10	K RAJAKUMARI	XXXXXXXX76P	M.Tech	SATHYABAMA UNIVERISTY	Computational Biology and Enzyme Kinetics	05/01/2018	6.7	Assistant Professor	Assistant Professor		Regular	No	16/08/2024	No
11	SOWMYA H	XXXXXXXX23B	M.Tech	ANNA UNIVERSITY	Systems Biology	23/07/2018	6.10	Assistant Professor	Assistant Professor		Regular	No	31/05/2025	No
12	Dr. K Dheeban Chakravarthi	XXXXXXXX89C	MS and PhD	The Pennsylvania State University, USA	Algal Biofuels and Bioproducts	04/07/2022	3.1	Professor	Professor		Regular	Yes		No
13	Dr K ASHOK KUMAR	XXXXXXXX00H	Ph.D	BHARATHIYAR UNIVERSITY	Environmental Biotechnology, Medical Biotechnology	02/07/2018	7.1	Assistant Professor	Assistant Professor		Regular	Yes		No
14	Dr B PRAKASH	XXXXXXXX39F	Ph.D	PERIYAR UNIVERSITY	Microbial Biotechnology	09/09/2019	5.11	Assistant Professor	Assistant Professor		Regular	Yes		No

15	Dr G Sharmilaa	XXXXXXXX36C	M.E. and Ph.D.	VELS INSTITUTE OF SCIENCE TECHNOLOGY AND ADVANCED STUDIES	Environmental Engineering	03/08/2015	10	Assistant Professor	Assistant Professor		Regular	Yes		No
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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(2024-25)	CAYm1 (2023-24)	CAYm2 (2022-23)
UG1.B	30	60	60
UG1.C	60	60	60
UG1.D	60	60	60
UG1: Biotechnology	150	180	180
DS=Total no. of students in all UG and PG programs in the Department	150	180	180
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= 150	S2= 180	S3= 180
DF=Total no. of faculty members in the Department	10	12	12
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= 10	F2= 12	F3= 12
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= 15.00	SFR2= 15.00	SFR3= 15.00
Average SFR for 3 years	SFR= 15.00		

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)	9	1	7.00	33.57
2023-24(CAYm1)	10	2	9.00	30.00
2022-23(CAYm2)	8	4	9.00	26.67

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	1.00	1.00	3.00	5.00	6.00
2023-24	1.00	1.00	2.00	3.00	6.00	8.00
2022-23	1.00	1.00	2.00	2.00	6.00	9.00
Average	RF1=1.00	AF1=1.00	RF2=1.67	AF2=2.67	RF2=5.67	AF2=7.67

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	Dr P ARUMUGAM	MANAGING DIRECTOR	ARMATS BIOTEKTRAINING & RESEARCH INSTITUTE	Tissue Engineering-Unit 5, Animal Biotechnology-Unit 2 & Unit 3	25.00
2	Dr A K RAMYA	MANAGING DIRECTOR	VERIDIAN MICROLABS PVT LTD	Bioinformatics and Computational Biology-Unit 3, Plant Biotechnology-Unit 3 & Unit 4	25.00

(CAYm2)

S.No	Name of the Person	Designation	Organization	Name of the Course	No. of hours handled
1	Dr S JAMUNA	DIRECTOR	AFFYCLONE LABORATORIES PVT LTD	Protein Structure, Function and Proteomics-Unit 2 & Unit 3, Principles of Food Processing-Unit 4	25.00
2	Dr A K RAMYA	MANAGING DIRECTOR	VERIDIAN MICROLABS PVT LTD	Bioinformatics and Computational Biology-Unit 4,Creativity, Innovation, Marine Biotechnology-Unit-3	25.00

(CAYm3)

S.No	Name of the Person	Designation	Organization	Name of the Course	No. of hours handled
1	Dr P ARUMUGAM	MANAGING DIRECTOR	ARMATS BIOTEK TRAINING AND RESEARCH INSTITUTE	BIOENTREPRENEURSHIP-Unit-3, ANIMAL BIOTECHNOLOGY-Unit 3, ANIMAL BIOTECHNOLOGY	20.00

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	31	44	28
2	No. of peer reviewed conference papers published	0	16	28
3	No. of books/book chapters published	17	27	14

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. K. Ashok Kumar		BIOTECHNOLOGY	Vermi transformation of Bagasse a Sugar Industry waste supplemented with Azolla and its Application in Plant Growth	Sri Ramachandra Educational and Health Trust, Chennai	2 YEARS	9.50
Dr. B. Prakash		BIOTECHNOLOGY	Mycelium-based biobricks for sustainable building: production, durability, and strength analysis	Sri Ramachandra Educational and Health Trust, Chennai	2 YEARS	10.50
Dr. Brindha Devi. P		BIOTECHNOLOGY	Sustainable use of fruit and vegetable waste to enhance food packaging performance	MSME	2 YEARS	14.75
						Amount received (Rs.):34.75

(CAYm3)**Total Amount (Lacs) Received for the Past 3 Years: 34.75**

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
Dr P VIVEK		BIOTECHNOLOGY	Antimicrobial, Antidiabetic Activity of Natural Drug Compounds and its Application in Wound Healing	Avigen Biotech Private Limited	6 MONTHS	1.25
Mrs.R.Thiruchelvi		BIOTECHNOLOGY	Screening optimization and analysis of selected natural product lead molecules and its anticancer studies	Armats Biotek Training and Research Institute (ABTRI)	6 MONTHS	1.25
Dr B PRAKASH		BIOTECHNOLOGY	POULTRY FEED ANALYSIS	AM POULTRY FARM TAMILNADU	1 YEAR	2.19
						Amount received (Rs.):4.69

(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 P BRINDHA DEVI	Mr IVO ROMAULD	BIOTECHNOLOGY	Carotenoid Pigment Extraction from Fruit and Vegetable Waste For Cosmetic Application	ARMA TS Biotek Training and Research Institute (ABTRI)	6 MONTHS	2.00
Dr B PRAKASH		BIOTECHNOLOGY	ENVIRONMENTAL SAMPLE ANALYSIS	GREEN PROCESS TECHNOLOGY CHENNAI	1 YEAR	1.25
Dr B PRAKASH		BIOTECHNOLOGY	Molecular characterization of Arbuscular Mycorrhiza	SYMBIOTIC SCIENCES PVT LTD	6 MONTHS	0.47
						Amount received (Rs.):3.72

Total amount (Lacs) received for the past 3 years: 8.41**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)

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.P.Sakthiselvan	Synthesis and Characterization of Eco-friendly biopolymer for packaging application	1 YEAR	2.00	2.00	PUBLICATION
Dr. P. Vivek	Preparation of Organic Textile dye and mordants using Calotropis gigantea and Citrus medic	1 YEAR	1.40	1.40	PUBLICATION
			Amount received (Rs.): 3.40		

(CAYm3)

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.P.Sakthiselvan	Synthesis of Eco-friendly Bio-Polymers & Its Application	1 YEAR	1.00	1.00	PUBLICATION
Dr. P. Vivek	Isolation and Molecular characterization of Endophytic fungi from Blepharis maderaspatensis	1 YEAR	1.00	1.00	PUBLICATION
			Amount received (Rs.): 2.00		

Total amount (Lacs) received for the past 3 years : 5.40

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	Cell and Microbiology Laboratory	2	Shaking Incubator-Orbital, SS Autoclave 50L capacity, Monocular and Binocular Microscopes, Analytical	8hrs	Mrs S NITHYA	LAB TECHNICIAN	B.Sc
2	BIOPROCESS & DOWNSTREAM PROCESSING LABORATORY	2	UV VISIBLE SPECTROPHOTOMETER, HOT AIR OVEN, COLORIMETER, SEROLOGICAL WATER	8hrs	Ms DHARSHINI	LAB TECHNICIAN	M.Sc
3	MOLECULAR BIOLOGY & GENETIC ENGINEERING LABORATORY	2	Mini Personal Centrifuge Hot plate UV Transilluminator Gel Rocker Vertical Dual Mini Gel System (SDS) Mini	8hrs	Mrs S NITHYA	LAB TECHNICIAN	B.Sc
4	COMPUTATIONAL BIOLOGY LABORATORY	2	Computer System with Intel Processor	8hrs	Mrs NIRMALA	LAB TECHNICIAN	DIPLOMO IN ECE
5	BIOSAFETY LABORATORY	1	SS Horizontal Laminar airflow Bacteriology Incubator	8hrs	Ms DHARSHINI	LAB TECHNICIAN	MSc

D2. Safety Measures in Laboratories

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

Sr. No	Laboratory Name	Safety Measures
1	Cell and Microbiology Laboratory	Do's and Don'ts have been displayed in the laboratory. Eye washer is available in the laboratory Safety measures including lab coat and gloves are mandatory. First Aid Kit is available Autoclave is available for sterilization.
2	Bioprocess and Downstream Processing Laboratory	Standard operating procedures have been displayed in the laboratory. Proper Ventilation and spacious place have been provided. Safety measures including lab coat and gloves are mandatory. Do's and Don'ts have been displayed in the laboratory
3	Molecular Biology and Genetic Engineering Laboratory	Safety measures including lab coat and gloves are mandatory. Do's and Don'ts have been displayed in the laboratory. DNA/RNA/Protein handling procedures are followed strictly. Waste disposal is available for Gels, Buffers and other biological materials. First aid and Fire extinguisher is available in the laboratory.
4	Computational Biology Laboratory	Electrical safety ensured with UPS and surge protectors CCTV surveillance and network security Do's and Don'ts have been displayed in the laboratory
5	Biosafety Laboratory	Biosafety cabinets, autoclaves, and fume hoods validated periodically Safety measures including lab coat and gloves are mandatory. Do's and Don'ts have been displayed in the laboratory. Decontamination protocols strictly enforced Biohazard waste disposed as per statutory norms

D3. Project Laboratory/Research Laboratory

The Department of Bioengineering at Vels Institute of Science Technology and Advanced Studies has established a dedicated area for undergoing Project/Research work for enhancing students innovative ideas for product development. This facility will be aligned with the growing areas such as Environmental Biotechnology, Carbon Capture system and in the areas of Drug discovery and Development. The details of the project laboratory/research laboratory /Centre of Excellence have been tabulated in the Table 7.5.1.

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

S.N.	Name of the Laboratory
1.	Project Laboratory
2.	Research Laboratory
3.	Central Instrumentation Laboratory
4.	Center for Energy and Alternative Fuels
5.	Center for Biomaterials
6.	VISTAS Incubation Center

7.5.1. Project Laboratory:

- The project lab has been equipped with important instruments for the final year students.
- The project lab is exclusive used for students to develop a prototype system and implement their creative and innovative ideas.

Key Facilities:

- Bioreactor, Eliza Plate Reader, Incubator, Microscopes are available as shown in the Figure.
- The students have developed water filter system using Biochar, Bio composite film for identifying meat freshness.
- The students have developed a sensor to detect the ground water purity.
- The students have also developed a carbon capture system for the bioenergy production.

7.5.2. Research Laboratory

- The research lab is exclusive for the research scholars who have doing their PhD.
- The research lab encourages the students in developing novel product/mechanism/process for their thesis work.
- This lab also encourages the students in publishing their work in SCOPUS/SCI journals.

7.5.3. Central Instrumentation Laboratory

The central Instrumentation Laboratory was established at Vels Institute of Science Technology and Advanced Studies in the Year 2017. The Laboratory have been established to help the students engaging in advanced research and product development. The equipments include,

- Field emission scanning electron microscope (FESEM) with Energy dispersive X-ray spectroscopy (EDS)
- Powder X-Ray Diffraction (XRD)
- High Performance Thin Layer Chromatography (HPTLC)
- Atomic Force Microscopy (AFM)
- Thermogravimetric Analyzer (TGA)
- Differential Scanning Calorimeter (DSC)
- Fourier Transform-Infra Red Spectroscopy (FT-IR) including Attenuated Total Reflectance (ATR) and Diffused Reflectance Spectroscopy (DRS) modes.

7.5.4 Center for Energy and Alternative Fuels

Centre for Energy and Alternative Fuels (CEAF) was established in Feb' 2017 at VISTAS to promote multidisciplinary activities focused on various aspects of energy technology and systems in the form of research, teaching and consultancy. As the budding research center, the present research activities in the center are in the form of projects-based research funded by various national funding agencies and Industries. By looking into the potential and application of different energy resources from the southern region of India, it is emphasized that the center gives priority to activities in the field of energy storage systems such as batteries and supercapacitors, microbial fuel cells, bio-sensors, alternative fuels and Efficiency of the energy systems etc. At present, the center has three eminent scholars, who are working in the energy storage

system and the center aims to associate faculty members from various departments within the institute such as Chemistry, Physics, Biotechnology, Civil, Mechanical and Electrical & Electronics Engineering as well as eminent faculties from nearby Institutes for the promotion of interdisciplinary energy research for the sustainable energy conservation and storage platform. The facilities available within the center have been a great support for the students working in different areas at VISTAS as well as for the students of various academic and research institutions in the southern region of India.

7.5.5 Center for Biomaterials

Center for Biomaterials lab have been established during the academic year 2022-2023 after the fund received from the MSME idea Hackathon. The center have been established to enhance the research and innovation in the areas of Biomaterials for its application in the medical and industry. The center facilitate the students project work, helps in guiding submission of project for various funding agencies. The research focuses on

- Development of Nano composite material
- Development of sustainable food packaging
- Bio-bandages for wound healing

7.5.6. VISTAS Incubation Center

The Incubation Centre (IC) established by 2018, has embarked on nurturing innovation and entrepreneurship. Incubation Centre inside campus has 2500 sq.ft built up area with 8 cubicles of space each fully furnished with Air Condition, Telephone and Internet connections. By 2021, Incubation Centre was further extended with same area in second floor also. Thus, the total built up area of Incubation Centre is currently 5000 sq.ft with 16 cubicles. Our focus area includes Sustainable Biotechnologies, Automations, IoT, Artificial Intelligence and ICT. Apart from companies we also encourage staff start ups and have a separate student lounge to encourage their innovations.

7.5.7 Outcomes of the Project/Research/Central Instrumentation/Center for Excellence Laboratory

- More than 25 projects have been completed yearly using in-house facilities.
- More number of Publication and grant of utility patent have been developed with the facilities available in the in-house.
- Various projects have been done with industry linked with the MoU signed companies.
- Students have worked on various projects funded by Government and non-government.
- The sample outcomes and the proofs have been depicted in the figure 7.3.6a and 7.3.6b.

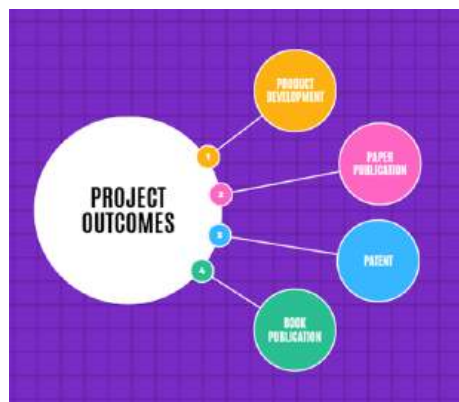


Figure 7.3.6a: Outcomes from the Project/Research laboratory



Figure 7.3.6b: Sample Outcomes of the Project developed with In-house facilities

7.5.8. Details of the products developed with the facilities available in the Project & Research Laboratory

a. Development of Biochar Water Filter System

The home-based biochar has been obtained under slow pyrolysis of neem and jack fruit trees and the activated carbon will be obtained from slow pyrolysis of fruit peels, which holds a commonly porous and stable carbon rich compounds which has the ability in water treatment. Hence, the circumambient 10 products- biochar and activated carbon filtration systems serve as a basic compatible tool in removal of various organic and inorganic pollutants in lake water. According to a new report by WHO and UNICEF 3 in 10 people worldwide, or 2.1 billion, lack access to safe, readily available water at home, the majority of them in developing regions including India. Achieving the sustainable development on ensuring availability and sustainable management of water and sanitation is a major challenge in the regions. So, this contribution aims to demonstrate the 20 biochar and activated carbon filtration system to the low community people for safe and pure drinking water. The figure 7.3.7 depicted the development of Biochar Water Filter system.



Figure 7.3.7: Water Filter System using Biochar

b. Sustainable use of Cellulose in food packaging

Cellulose is the most prevalent organic compound on earth. Bacterial cellulose has several industrial uses due to its excellent dispensability and taste and odor lessness. The biopolymer cellulose has highly special characteristics and is used for a variety of commercial applications. The cellulose has been extracted using a variety of techniques and resources, however when compared to other techniques, the SCOBY method of extraction offers many advantages. Here using bacteria and yeast to break down fruit and vegetable wastes, the SCOBY technique of cellulose extraction creates cellulose that is purer. Biodegradable polymers are frequently used in packaging materials in addition to in medication to cut down on waste production. The Cellulose Biofilm developed from Fruit and Vegetable Waste with SCOBY Technology has been depicted in the Figure 7.3.8.



Figure 7.3.8: Cellulose Biofilm developed from Fruit and Vegetable Waste with SCOBY Technology

c. Nano-encapsulated Bio-bandages for Wound Healing

In the pursuit of innovative and eco-friendly wound care solutions, combining advanced technologies with sustainable materials is essential. Traditional wound dressings often rely on non-biodegradable materials and may lack sufficient antimicrobial properties. The development of innovative wound care solutions is crucial in addressing both healthcare needs and environmental concerns. This thesis focuses on the creation of a biobandage incorporating iron nanoparticles (FeNPs) synthesized through eco-friendly, green technology. By utilizing plant-based extracts as natural reducing and stabilizing agents, the project introduces an innovative approach that aligns with the principles of green chemistry, minimizing the need for hazardous chemicals and reducing ecological impact. The biobandage comprises a biodegradable and biocompatible bacterial cellulose matrix, a material known for its strong compatibility with biological tissues. Bacterial cellulose provides a unique structure that offers both flexibility and resilience, making it well-suited for wound dressing applications. Embedded within this matrix are the FeNPs synthesized from plant extracts, which deliver a range of therapeutic benefits. This structure supports tissue regeneration, promotes wound healing, and provides antimicrobial protection, making it highly effective for medical applications. This approach not only offers a moist, breathable environment that facilitates faster wound closure but also significantly reduces infection risks, particularly from antibiotic-resistant microorganisms, a growing challenge in medical care. The Development of Nano Encapsulated Bio-bandages have been depicted in the figure 7.3.9.

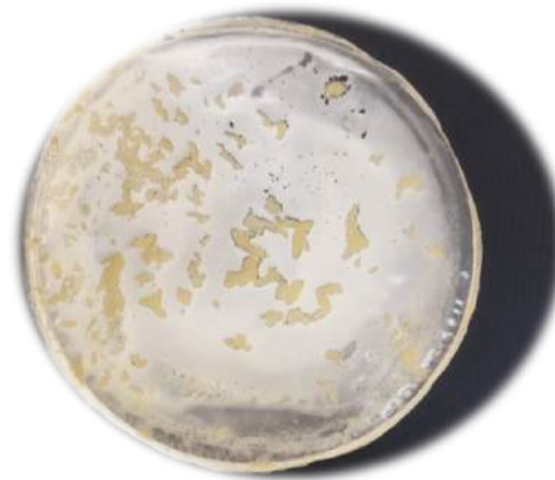


Figure 7.3.9: Development of Nano Encapsulated Bio-bandages

d. Colorimetric film for monitoring food freshness

The colours of anthocyanins are sensitive to variations in the pH of the environment. The field of food engineering is seeing a rise in the utilisation of anthocyanins obtained from plants to produce new and active packaging film. A pH-sensitive colorimetric film was developed using anthocyanin recovered from black kidney bean peel in conjunction with composite pectin derived from citron peel. Additionally, anthocyanins can be used as colorimetric indicators to detect food deterioration because of their sensitivity to pH changes and the production of ammonia gas. The film produced by solvent casting process changed from pink to brownish with rising pH due to the ammonia vapour that was produced. The antioxidant and antibacterial abilities of the anthocyanin containing smart films were investigated, and both *Escherichia coli* and *Staphylococcus aureus* growth was successfully inhibited. The developed film was characterized for its physical properties such as water solubility, moisture content and swelling index. Scanning Electron Microscopy (SEM) analysis was done to

study the morphology of the film. The film indicator active response to pH fluctuation was demonstrated through tests on samples of chicken meat under various settings, allowing for the real-time monitoring of spoiled foods. This makes monitoring perishable goods, easy, affordable, environmentally friendly and biodegradable pH-sensitive indicator with visible colour change. The figure 7.3.10 depicts the colorimetric film quality on the meat sample.



Figure 7.3.10: Colorimetric film quality test on meat sample

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= $\frac{\text{No. of faculty members } ((\text{NS1} \times 0.8) + (\text{NS2} \times 0.2))}{\text{No. of required faculty (RF4)}}; \text{Percentage} = \frac{((\text{NS1} \times 0.8) + (\text{NS2} \times 0.2))}{\text{RF}}$
2022-23(CAYm2)	720	36	39	36	107
2023-24(CAYm1)	840	42	39	43	95
2024-25(CAY)	1050	52	38	48	77

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 2024-25	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	Budgeted in 2021-22	Actual Expenses in 2021-22 till
Infrastructure Built-Up	2000000	1817998	440000000	352214411	440000000	352214411	440000000	435955583
Library	1000000	18241059	18000000	16550838	15000000	16550838	15000000	13871222
Laboratory equipment	85000000	81456214	75000000	73449396	65000000	63655455	62000000	61467822
Teaching and non-teaching staff salary	950000000	926233709	750000000	732899623	750000000	643173375	500000000	464612964

Outreach Programs	20000000	15908349	20000000	17914760	20000000	9786818	5000000	4893508
R&D	95000000	92145621	90000000	89421345	90000000	82894782	76000000	75563540
Training, Placement and Industry linkage	15100000	15090744	10000000	8187632	10000000	5590661	1200000	1195039
SDGs	3000000	2389456	3000000	2087421	3000000	1887892	1600000	1507532
Entrepreneurship	7600000	7569845	7000000	6975415	7000000	6745215	5900000	5845124
Others, Operational expenditure	1275000000	1271936625	775000000	751385022	775000000	778654506	1000000000	975115542
Total	2453700000	2432789620	2188000000	2051085863	2175000000	1961153953	2106700000	2040027876

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 2024-25	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	Budgeted in 2021-22	Actual Expenses in 2021-22 till
Laboratory equipment	500000	484241	150000	147063	150000	138060	100000	81245
Software	0	0	0	0	0	0	0	0
SDGs	250000	215054	200000	198452	200000	187525	150000	143273
Support for faculty development	250000	201425	200000	199487	200000	154089	100000	75849
R & D	7600000	7501575	7300000	7164706	7000000	6538740	6000000	5875242
Industrial Training, Industry expert, Internship	200000	185800	150000	100850	100000	68850	50000	38478
Miscellaneous Expenses*	5000000	4789000	4000000	3826510	2700000	2694648	1500000	1248782
Total	13800000	13377095	12000000	11637068	10350000	9781912	7900000	7462869