VIGNAN'S

Foundation for Science, Technology & Research

(Deemed to be University)

-Estd. u/s 3 of UGC Act 1956

DEPARTMENT OF BIOTECHNOLOGY

Action Taken Report of B. Tech Biotechnology Programme

Implemented in R21 (from A.Y:2021-22) based on R19 Feedback

Action taken based on the suggestions from Students:

1. The Course Contents of Biotechnology Curriculum are in tune with the Program Outcomes

2. The Biotechnology Course Contents are designed to enrich laboratory Skills and Core competencies.

3. The Courses placed in the Biotechnology curriculum serve the needs of both advanced and slow learners.

4. Contact Hour Distribution among the various Course Components (LTP) is Satisfiable.

5. The Electives offered will enrich the passion to learn new technologies in emerging areas.

6. The Curriculum provides an opportunity towards Self learning to realize the expectations.

7. The Composition of Basic Sciences, Engineering, Humanities and Management Courses in the curriculum is a right mix and satisfiable.

8. No. of Laboratory sessions Integrated with Theory Courses in Biotechnology have been sufficient to improve the technical skills.

9. Integration of Minor Project with Theory Courses offered in Biotechnology have enhanced the technical competency and leadership skills in the management of biotech related firms.

Analysis of Overall Feedback given by the Students on R19

Parameters	Strongly Agree	Agree	Moderate	Disagree	Strongly Disagree	Avg. Rating	Grade
Q1	76.1	22.1	0.8	0.6	0.4	4.729	Excellent
Q2	47.8	50	1.4	0.2	0.6	4.442	Excellent
Q3	75.3	23.1	0.4	0.6	0.6	4.719	Excellent
Q4	51.6	47	0.8	0.2	0.4	4.492	Excellent
Q5	75.1	23.3	0.8	0.4	0.4	4.723	Excellent
Q6	55.8	43	0.6	0.4	0.2	4.538	Excellent
Q7	54.4	44.6	0.4	0.4	0.2	4.526	Excellent
Q8	81.3	17.7	0.4	0.2	0.4	4.793	Excellent
Q9	86.3	12.7	0.4	0	0.6	4.841	Excellent

Itemized responses given to the Suggestions of Students

Suggestion: More industrial mechanism need to be introduced and how biotechnology works with it

Action Taken: To provide knowledge on industrial processes in Biotechnology, a course named Industrial Biotechnology was added to professional electives.

Suggestion: Increase the number of computer courses to improve the programming skills of students which will fetch jobs in software industry

Action Taken: Keeping eye on the developments in IT sector, to prepare the students to get high package IT jobs eight new computer courses namely, Introduction to C programming, programming for problem solving, Data Structures, Object Oriented Programming, Database Management System, Python Programming, Web Technologies, Competitive Programming and Mini Project were included in R 21 curriculum.

Suggestion: Introduce computer programming languages to increase job opportunities in IT industries

Action Taken: Keeping eye on the developments in IT sector, to prepare the students to get high package IT jobs eight new computer courses namely, Introduction to C programming, programming for problem solving, Data Structures, Object Oriented Programming, Database Management System, Python Programming, Web Technologies, Competitive Programming and Mini Project were included in R 21 curriculum.

Suggestion: Need some communication skill development classes

Action Taken: A good number courses are already present in R19 curriculum for the development of communication skills. In addition, Cambridge University certification courses like BEC and PET are conducting to give better focus on communication skills.

Action taken based on the suggestions from Alumni:

1. The Curriculum laid a good foundation in understanding the basic engineering concepts in Biotechnology.

2. The Course Contents of Biotechnology Curriculum are in tune with the Program Outcomes.

3. The Biotechnology Curriculum encompasses all the required Job Oriented Skills.

4. Professional and Open Electives of Curriculum serve the technical advancements needed in the Biotech, Biologics and Pharma industry.

5. The Tools and Technologies learnt during laboratory sessions will enrich the quality control and quality assurance in Biotechnology industry.

Analysis of Overall Feedback given by the Alumni on R19

Parameters	Strongly Agree	Agree	Moderate	Disagree	Strongly Disagree	Avg. Rating	Grade
Q1	39.1	45.7	6.5	8.7	0	4.152	Excellent
Q2	52.2	21.7	19.6	6.5	0	4.196	Excellent
Q3	30.4	41.3	15.2	13	0	3.888	Very Good
Q4	41.3	34.8	13	8.7	2.2	4.043	Very Good
Q5	30.4	34.8	13	21.7	0	3.736	Very Good
Q6	43.5	30.4	15.2	6.5	4.3	4.02	Very Good
Q7	54.3	28.3	6.5	6.5	4.3	4.131	Excellent

Itemized responses given to the suggestions of Alumni

Suggestion: Focus on programming skills to get better placement offers in IT sector.

Action Taken: Keeping eye on the developments in IT sector, to prepare the students to get high package IT jobs eight new computer courses namely, Introduction to C programming, programming for problem solving, Data Structures, Object Oriented Programming, Database Management System, Python Programming, Web Technologies, Competitive Programming and Mini Project were included in R 21 curriculum.

Suggestion: The concepts on fermentation technology must be incorporated in the curriculum to give industry exposure to students.

Action Taken: A new course namely Microbiology & Fermentation Technology was introduced in R21 curriculum to give fundamentals of fermentation technology.

Suggestion: Knowledge on bioethics is essential when working in Biotech industry hence, a course on Bioethics needs to be introduced.

Action Taken: A course titled Bioethics and Intellectual Properties Rights was added to Professional department electives.

Suggestion: Professional departmental electives needs to be enriched with courses on advanced technologies in Biotechnology.

Action Taken: New courses in emerging areas like Machine learning in life sciences, 3D bioprinting, Vaccinology was introduced in R 21 curriculum.

Suggestion: Increase the number of computer courses to improve the programming skills of students which will fetch jobs in software industry

Action Taken: Keeping eye on the developments in IT sector, to prepare the students to get high package IT jobs eight new computer courses namely, Introduction to C programming, programming for problem solving, Data Structures, Object Oriented Programming, Database Management System, Python Programming, Web Technologies, Competitive Programming and Mini Project were included in R 21 curriculum.

Suggestion: Include GATE syllabus in in curriculum which helpful to the students in cracking GATE exam

Action Taken: GATE syllabus was considered in preparing the syllabus of R21 curriculum.

Action taken based on the suggestions from Faculty:

1. The Course Contents of Biotechnology Curriculum are in tune with the Program Outcomes.

2. The Course Contents along with the laboratory skills will enhance Biotechnology and Core competencies.

3. The allocation of Credits to the respective Courses is satisfiable.

4. The Contact Hour Distribution among the various Course Components (LTP) is Satisfiable

5. Electives will enable the passion to learn new technologies in emerging areas of Biotechnology.

6. The Curriculum provides an opportunity towards Self learning to realize the expectations.

7. The Composition of Basic Sciences, Engineering, Humanities and Management Courses in the curriculum is satisfiable?

8. The number of theoretical courses amalgamated with laboratory sessions is sufficient to improve the Genetic Engineering and Bioprocess technical skills of students.

9. The integration of Minor Project with Theory Courses will improve the technical competency and leadership skills among the students.

Analysis of Overall Feedback given by the Faculty on R19

Parameters	Strongly Agree	Agree	Moderate	Disagree	Strongly Disagree	Avg. Rating	Grade
Q1	70	30	0	0	0	4.7	Excellent
Q2	63.3	36.7	0	0	0	4.633	Excellent
Q3	83.3	13.3	0	0	3.3	4.73	Excellent
Q4	76.7	20	0	0	3.3	4.668	Excellent
Q5	66.7	33.3	0	0	0	4.667	Excellent
Q6	66.7	30	3.3	0	0	4.634	Excellent
Q7	76.7	23.3	0	0	0	4.767	Excellent
Q8	76.7	16.7	6.7	0	0	4.704	Excellent
Q9	73.3	23.3	0	3.3	0	4.663	Excellent

Itemized responses given to the suggestions of Faculty

Suggestion: More number of IT courses need to be integrated into the curriculum so as to orient students towards interdisciplinary knowledge. Also course on vaccines is required.

Action Taken: Keeping eye on the developments in IT sector, to prepare the students to get high package IT jobs eight new computer courses namely, Introduction to C programming, programming for problem solving, Data Structures, Object Oriented Programming, Database Management System, Python Programming, Web Technologies, Competitive Programming and Mini Project were included in R 21 curriculum. A New course on Vaccinology was also introduced to inculcate knowledge on vaccine production

Suggestion: R19 is good curriculum and all courses are in tune with current industry requirement. But nowadays a lot of job market is in the computers field, I suggest to add more computer courses like machine learning, R programming and python programming and 3d bio-printing.

Action Taken: All courses suggested were incorporated in R21 curriculum

Suggestion: The curriculum looks fine and may be the introducing new bioinformatics courses like Sars-Cov2 genomic analysis in to the biotechnology stream will add extra benefits to the students

Action Taken: Genomic analysis component is already existing in course entitled Genomics, Proteomics and Metabolomics

Suggestion: R19 is a good syllabus, however better to improve by adding computer courses upon current needs for obtaining jobs in various sector

Action Taken: Keeping eye on the developments in IT sector, to prepare the students to get high package IT jobs eight new computer courses namely, Introduction to C programming, programming for problem solving, Data Structures, Object Oriented Programming, Database Management System, Python Programming, Web Technologies, Competitive Programming and Mini Project were included in R 21 curriculum. A New course on Vaccinology was also introduced to inculcate knowledge on vaccine production

Action taken based on the suggestions from Employers:

1. The Course Contents of Biotechnology Curriculum are in tune with the Program Outcomes.

2. The relevance of the Course Contents is applicable with the Biotech, Biologics and Pharma Industry.

3. The Professional Electives and Open Electives offered to students are in-line with the technology advancements in the biotech related firms.

4. Applicability of the tools and technologies described in the curriculum will be enough to practice in Industry.

5. Laboratory skills and theoretical concepts acquired by the students through the course contents will enable them to be placed in MNC.

Analysis of Overall Feedback given by the Employers on R19

Parameters	Strongly Agree	Agree	Moderate	Disagree	Strongly Disagree	Avg. Rating	Grade
Q1	75	0	4.2	20.8	0	4.292	Excellent
Q2	75	0	20.8	4.2	0	4.458	Excellent
Q3	70.8	8.3	16.7	4.2	0	4.457	Excellent
Q4	62.5	33.3	4.2	0	0	4.583	Excellent
Q5	83.3	4.2	4.2	8.3	0	4.625	Excellent

Itemized responses given to the suggestions of Employers

Suggestion: I appreciate efforts of department of Biotechnology of VFSTR for bringing such a nice curriculum for B.Tech Biotechnology program. Inculcating project based learning in student community will certainly improves the practical skills in students. Bioethics component is missing in the curriculum

Action Taken: A course entitled Bioethics and Intellectual Properties Rights was added to Professional department electives.

Suggestion: The curriculum is very good and giving priority to project based learning is the key feature in the curriculum. Further concentrate on courses related to advanced topics such as 3D bioprinting.

Action Taken: New courses in emerging areas like Machine learning in life sciences, 3D bioprinting and Vaccinology was introduced in R 21 curriculum.

Suggestion The curriculum is very good and giving priority to project based learning is the key feature in the curriculum. Increases courses related to informatics and computational biology

Action Taken: a good weightage was given to informatics and biological computations was given in R 19 itself.

Suggestion: Congratulations to department of Biotechnology of VFSTR for bringing a good curriculum for B.Tech Biotechnology program. The curriculum covers all aspects of biotechnology and it can be further strengthened by strengthening professional electives

Action Taken: A good number of courses in emerging areas like Machine learning in life sciences, 3D bioprinting and Vaccinology were introduced in professional departmental in R 21 curriculum.

HOD, BT