VIGNAN'S
Foundation for Science, Technology & Research
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DEPARTMENT OF BIOTECHNOLOGY

Date: 06.02.2023

Board of Studies (BoS) meeting of M.Tech., Biotechnology programme was conducted on 06.02.2023 in blended mode from 09.00 am onward in VSF 05, 2nd floor, U Block VFSTR and also with the following Google meet link: https://meet.google.com/bqe-wzzj-bmz

Agenda of the BoS Meeting:

1. To Discuss and finalize the curriculum structure and detailed syllabus of M.Tech., Biotechnology Programme for the regulation 2022.
2. To approve the R22 curriculum and syllabus of M.Tech., Biotechnology Programme and recommend to the Academic council.
3. Any other points with the permission of Chairperson.

The following members were present either thorough offline or online.

S.No	Name	Members	Signature
1.	Prof. T.C. Venkateswarulu HOD Department of Biotechnology VFSTR	Chairman, BOS	
2.	Prof. G. Sathya Narayana, Department of Biotechnology, IIT Madras	External member	Attended online
3.	Dr.Vijayalakshmi Venkatesan, Scientist 'G', National Institute of Nutrition,	External member	Attended online

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4.	Prof. R. Satish Babu, Department of Chemical Engineering, NIT Warangal	External member	Attended online.
5.	Prof. S. Krupanidhi Department of Biotechnology, VFSTR	Internal member	Attended online
6.	Dr.M. Indira, Associate Professor Department of Biotechnology, VFSTR	Internal Member	
7.	Dr.A.R. Reddy, Associate Professor Department of Biotechnology, VFSTR	Internal Member	
8.	Dr.A.V. Narayana, Associate Professor Department of Biotechnology, VFSTR	Internal Member	
9.	Dr. K. Chandra Sekhar, Assistant Professor Department of Biotechnology, VFSTR	Internal Member	
10.	Dr. Dr. K. Sudheer Kumar, Assistant Professor Department of Biotechnology, VFSTR	Internal Member	
11.	Dr. Dr. Dr. M. Viswajit, Assistant Professor Department of Biotechnology, VFSTR	Internal Member	
12.	Prof. D. John Babu, Department of Biotechnology, VFSTR	Member Secretary	

Chairperson Dr. T.C. Venkateswarulu, Professor and Head, Department of Biotechnology, VFSTR opened the meeting by welcoming and introducing the external members, invitees to the internal members. Chairperson presented about the *NEP 2020 Compliant Regulation - R22* which emphasis on creating *learning centric* (continuous learning and continuous assessment model), offering M.Tech., M.Tech. with Add-on Diploma, providing multiple entry and multiple exits.

The following points were discussed in the BoS meeting:

1. Regulation R22.
2. Curriculum structure with credits, credits distribution.

3. 2 Modules instead of 5 units.
4. Assessment methods (Formative & Summative; 60:40).
5. Grading Schemes (O, S, A, B, C, D).
6. Pool of Department electives.

The following resolutions made after the discussion:

1. BoS Members approved the revised regulations, curriculum structure, syllabus of M.Tech., Biotechnology programme and it follows based on the NEP 2020. Curriculum structure is provided in Appendix-I.
2. Major restructuring has taken place in the curriculum which is oriented towards continuous learning and assessment based on Module structure.
3. Major reformation has taken place in the curriculum by offering Minor degree through 20 more credits with additional courses.
4. The curriculum is encompassing the courses that enable employability or entrepreneurship or skill development, provided in Appendix- II.
5. The significant changes are made in the content of all courses and hence the courses are considered as new courses provided in Appendix- III.
6. Stakeholders feedback is analyzed thoroughly and the curriculum follows the choice based credit system (CBCS).
7. Total average percentage of syllabus revised was 74.44% compared to previous curriculum.
8. Prof. Vijaya Lakshmi suggested inclusion of Artificial Intelligence and ML applications in Biotechnology as a separate course along with 19 elective courses (totalling 20 courses).
9. Dr. R. Sathish Babu, NITW suggested to incorporate any designer for simulation software for Bioprocess Modeling. He also suggested better to have recycle bioreactor, case studies can also be included in the simulation and super pro designer software.
10. Prof. Vijaya Lakshmi suggested to incorporate topics related to different facilities (Bio safety levels) for handling microorganisms, cell lines, precautions while maintaining cell lines and also evaluate them by Institutional Biosafety Committee (IBC).
11. Prof. G. Satyanarayana, suggested to include mammalian cell cultures in course (cloning and expression using bacterial, yeast and mammalian cell expression) and post translational modification techniques. He also suggested to include plant cell cultures and

taxol production, recovery of proteins from inclusion bodies using moving bed chromatography.

12. The course title Protein biology and immobilization technology can be replaced with protein engineering and biotherapy as suggested by Prof. Vijaya Lakshmi and Prof. Satyanarayana.
13. Prof. G. Satyanarayana suggested to remove word "organisms" from Solid waste management course, Sir also suggested to include case studies in circular bioeconomy and anti-microbial resistance in waste water management

Based on the suggestions given by the members, the Chairperson of BoS told that, those fruitful suggestions would be incorporated appropriately in the curriculum and syllabi of the regulation R22 and this will be recommended to the Academic Council of VFSTR for the approval.

There being no further points for discussion, the Chairperson thanks all the external, internal, invited members and announced that the meeting was adjourned.

Member Secretary

Chairperson

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APPENDIX I

M.Tech Biotechnology: Curriculum Structure

Semester - I

S. No	Course Title	L	T	P	C
1.	r-DNA technology & Advances in Genomics	3	-	2	4
2.	Advanced Bioprocess Technology	3	-	2	4
3.	Advanced Immunotechnology and Vaccine Design	3	-	2	4
4.	Department Elective-I	2	0	2	3
5.	Department Elective-II	2	0	2	3
6.	Cyber Security	1	2	0	2
7.	Employment Orientation Program	0	2	2	2
	Grand Total	14	4	12	
		30			22

Semester - II

S. No	Course Title	L	T	P	C
1.	Bioreactor Design and Operations	3	-	2	4
2.	OMICS Technologies	3	-	2	4
3.	Department Elective-III	2	-	2	3
4.	Department Elective-IV	2	-	2	3
5.	Research Methodology and IPR	1	2	-	2
6.	Inter Departmental Project	-	1	3	2
7.	Teaching activity	-	-	4	2
	Total				20
8.	Add on Certification course - I	3	-	2	4
	Grand Total	14	3	17	
		34			24

II Year Semester – I

S. No	Course Title	L	T	P	C
1.	Project/Internship	-	2	24	13
2.	Add on Degree-II (MOOCS Course)/ Self Study course	4	-	-	4
	Grand Total	4	2	24	17

II Year Semester – II

S. No	Course Title	L	T	P	C
1.	Project/Internship	-	2	24	13
2.	Add on Degree-III (MOOCS Course)/Self Study course	4	-	-	4
	Grand Total	4	2	24	17

Pool of Electives

S. No	Course Title	L	T	P	C
1.	Advanced Bioprocess modelling, control, and simulation	2	0	2	3
2.	Plant DNA Barcoding	2	0	2	3
3.	Computational and Systems Biology	2	0	2	3
4.	Advanced algal technologies	2	0	2	3
5.	Environmental Biotechnology	2	0	2	3
6.	Industrial Microbiology	2	0	2	3
7.	Advanced Biosensors	2	0	2	3
8.	Herbal formulations	2	0	2	3
9.	Advanced Bioremediation technology	2	0	2	3
10.	Health Informatics	2	0	2	3
11.	Bio-composites materials	2	0	2	3
12.	NGS technologies	2	0	2	3
13.	Good Laboratory Practices	2	0	2	3
14.	Clinical Immunology	2	0	2	3
15.	Production of Bio-therapeutics	2	0	2	3
16.	Advanced Bio-separation Technologies	2	0	2	3
17.	Protein biology and Immobilization technology	2	0	2	3
18.	Computational Fluid Dynamics	2	0	2	3
19.	Advanced Nano-biotechnology	2	0	2	3

Add on certification - I

Stream – I: Bioremediation and Waste valorization

S. No	Course Title	L	T	P	C
1.	Bio-electrochemical Systems	3	-	2	4
2.	Waste Management and Circular Bio-economy	3	-	2	4
3.	Advanced Bioremediation Technologies	3	-	2	4

Chairperson

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APPENDIX II

List of Courses that Enables Employability or Entrepreneurship or Skill Development

S. No.	Year and Semester	Course Title	Employability / Entrepreneurship / Skill development
1.	I Year I Semester	r-DNA technology & Advances in Genomics	Skill development
2.	I Year I Semester	Advanced Bioprocess Technology	Skill development
3.	I Year I Semester	Advanced Immunotechnology and Vaccine Design	Skill development
4.	I Year I Semester	Cyber Security	Skill development
5.	I Year I Semester	Employment Orientation Program	Employability
6.	I Year II Semester	Bioreactor Design and Operations	Skill development
7.	I Year II Semester	OMICS Technologies	Skill development
8.	I Year II Semester	Research Methodology and IPR	Skill development
9.	I Year II Semester	Advanced Bioprocess modelling, control, and simulation	Employability
10.	I Year II Semester	Plant DNA Barcoding	Skill development
11.	Department Elective Course	Computational and Systems Biology	Skill development
12.	Department Elective Course	Advanced algal technologies	Skill development
13.	Department Elective Course	Environmental Biotechnology	Skill development
14.	Department Elective Course	Industrial Microbiology	Skill development

15.	Department Elective Course	Advanced Biosensors	Skill development
16.	Department Elective Course	Herbal formulations	Skill development
17.	Department Elective Course	Advanced Bioremediation technology	Skill development
18.	Department Elective Course	Health Informatics	Skill development
19.	Department Elective Course	Bio-composites materials	Skill development
20.	Department Elective Course	NGS technologies	Skill development
21.	Department Elective Course	Good Laboratory Practices	Skill development
22.	Department Elective Course	Clinical Immunology	Skill development
23.	Department Elective Course	Production of Bio-therapeutics	Skill development
24.	Department Elective Course	Advanced Bio-separation Technologies	Skill development
25.	Department Elective Course	Protein biology and Immobilization technology	Skill development
26.	Department Elective Course	Computational Fluid Dynamics	Skill development
27.	Department Elective Course	Advanced Nano-biotechnology	Skill development

Chairperson

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APPENDIX III

List of New Courses in the R22 Curriculum

S. No.	Year and Semester	Course Title	Employability / Entrepreneurship / Skill development
1.	I Year I Semester	r-DNA technology & Advances in Genomics	Skill development
2.	I Year I Semester	Advanced Immunotechnology and Vaccine Design	Skill development
3.	I Year I Semester	Cyber Security	Skill development
4.	I Year II Semester	Bioreactor Design and Operations	Skill development
5.	I Year II Semester	OMICS Technologies	Skill development
6.	I Year II Semester	Advanced Bioprocess modelling, control, and simulation	Employability
7.	I Year II Semester	Plant DNA Barcoding	Skill development
8.	Department Elective Course	Advanced algal technologies	Skill development
9.	Department Elective Course	Environmental Biotechnology	Skill development
10.	Department Elective Course	Industrial Microbiology	Skill development
11.	Department Elective Course	Advanced Biosensors	Skill development
12.	Department Elective Course	Herbal formulations	Skill development
13.	Department Elective Course	Advanced Bioremediation technology	Skill development

14.	Department Elective Course	Health Informatics	Skill development
15.	Department Elective Course	Bio-composites materials	Skill development
16.	Department Elective Course	NGS technologies	Skill development
17.	Department Elective Course	Good Laboratory Practices	Skill development
18.	Department Elective Course	Clinical Immunology	Skill development
19.	Department Elective Course	Production of Bio-therapeutics	Skill development
20.	Department Elective Course	Advanced Bio-separation Technologies	Skill development
21.	Department Elective Course	Protein biology and Immobilization technology	Skill development
22.	Department Elective Course	Computational Fluid Dynamics	Skill development
23.	Department Elective Course	Advanced Nano-biotechnology	Skill development

Chairperson