VIGNAN'S
Foundation for Science, Technology & Research
(Deemed to be University)
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DEPARTMENT OF BIOTECHNOLOGY

Date: 01.07.2021

Minutes of Board of Studies (BOS) meeting of B.Tech Bioinformatics program held on 01-07-2021 virtually by the Chairman and Head of the Department, Department of Biotechnology, VFSTR, Vadlamudi. through Zoom

Agenda of the meeting:

1) To discuss and finalize structure and detailed syllabus for B.Tech Bioinformatics program applicable from 2021-22 admitted batch.
2) To seek approval for the induction of computer courses in the curriculum.

Members present:

S.No	Name	Members
1.	Prof. S. Krupanidhi, HOD Department of Biotechnology	Chairman, BOS
2.	Prof. Mukesh Doble, IIT, Madras	Invited member
3.	Prof. Sathyanarayana N Gummadi, , IIT, Madras	Invited member
4.	Dr.Vijayalakshmi Venkatesan, Scientist 'G' National Institute of Nutrition, Hyderabad	Invited member
5.	Dr. Shyam Perugu, NIT, Warangal	Invited member
6.	Dr.Narashimhan, Manager, ADVANTA Pvt Ltd, Hyderabad	Invited member
7.	Dr. D. Vijaya Ramu, Professor & Dean Academics	Internal Member
8.	Dr.D.John Babu, Professor	Internal Member
9.	Dr. T C Venkateswarulu, Professor, Dy HoD	Internal Member
10.	Dr. S. Asha, Professor	Internal Member
11.	Dr.A.Ranganadha Reddy, Assoc. Professor	Internal Member
12.	Dr.Tarun Pal, Assoc. Professor	Internal Member

Minutes of the BOS meeting

1. The chairman welcomed all the members of BOS.
2. The chairman highlighted broad objectives of the proposed changes in the course structure of B.Tech Bioinformatics program.
3. The chairman also explained in detail the suggestions and comments received from various stakeholders.
4. The members of the BOS thoroughly looked at the proposals of the Department of Biotechnology in the light of suggestions made by experts and recommended a new course structure for B. Tech Bioinformatics program.

After the discussion it is resolved to:

1. Propose and approve course structure for all 4 years of B.Tech. Programme in Bioinformatics (Appendix - I).
2. Propose and approve detailed syllabus for the 4 year of B.Tech. Programme in Bioinformatics with effect from the academic year 2021-22. The proposed structure and syllabus are applicable from 2021 admitted batch onwards.
3. Stakeholder's feedback is collected, analyzed and given utmost priority while designing the curriculum and their suggestions are implemented
4. The curriculum follows choice-based credit system (CBCS)
5. Major restructuring has taken place in the curriculum by introducing new and advanced courses in computing and informatics such as Machine learning in life sciences, Vaccinology and 3D Bioprinting. Mini projects related to ML.
6. The total percentage of syllabus revision for B.Tech Bioinformatics Program is 30.35%.
7. The curriculum is encompassing the courses that enable employability or entrepreneurship or skill development (Appendix II)
8. In the B.Tech. Bioinformatics revised regulation R21, the substantial changes are made in the content of all courses and hence the courses are considered as new courses (Appendix III)

APPENDIX – I

Course Structure

I Year I Semester

Course Title	C
Engineering Mathematics I(B)	5
Engineering Physics I (C)	4
Basics of Electrical & Electronics Engineering	4
Engineering Graphics & Design	3
Introduction to C programming	4
Basics of Computer and Internet	4
Physical Fitness, Sports & Games-I	**1**
Total	**25**

I Year II Semester

Course Title	C
Engineering Mathematics II(B)	5
Organic Chemistry	4
Programming for Problem Solving – II	4
English Proficiency and Communication Skills	1
Technical English Communication	3
Constitution of India	1
Workshop	2
Physical Fitness, Sports & Games-2	**1**
Total	**21**

II Year I Semester

Course Title	C
Probability and Statistics	4
Unix Programming	3
Molecular Genetics	4
Perl	4
Data Structures	3
Management Science	3
Life Skills-I	**-**
Technical Seminar-I	**1**
Intra-Disciplinary Projects-I	**1**
Physical Fitness, Sports & Games-III	**1**
Total	**24**

II Year II Semester

Course Title	C
Biochemistry	4
Machine learning in life sciences	3
Immunoinformatics	4
Environmental Science	1
Open Elective - I	**3**
Open Elective - II	**3**
Life Skills -II	**1**
Technical Seminar-II	**1**
Intra-Disciplinary Projects-II	**1**
Total	**21**

III Year I Semester

Course Title	C
Computational Biology	4
R Programming	4
Vaccinology	3
Soft Skills Lab	1
Open Elective - III	3
Open Elective - IV	3
Employability Skills-I	-
Inter-Departmental Projects-I	2
Modular Course	1
Department Elective-I	3
Total	**24**

III Year II Semester

Course Title	C
Molecular Phylogenetics	4
Data Science	4
Professional Communications Lab	1
Human Values, Professional Ethics & Gender Equity	2
Open Elective - V	2
Open Elective - VI	1
Open Elective (via NPTEL/Swayam)	3
Employability Skills-II	1
Inter-Departmental Projects-II	2
Department Elective-II	3
Total	**23**

IV Year I Semester

Course Title	C
Algorithms in Computational Biology	4
Internet of Things	3
Structural Bioinformatics	4
Societal-Centric and Industry Related Project	**3**
Department Elective-III	**3**
Department Elective-IV	**3**
Total	**20**

IV Year II Semester

Course Title	C
Internship/Project work (Industry oriented projects)	**12**
Total	**12**

The courses that are highlighted denote implementation of 'Choice Based Credit System (CBCS)'

Department Electives

Course Title	C
Molecular Interactions	3
Metabolomics	3
Biological Database	3
Drug Design	3
Metabolic Pathways	3
Systems Biology	3
Neural Networks	3
3D Bioprinting	3
Immunotechnology	3

Phage Display	3
DNA Barcoding for Conservation Strategy	3
Bioethics and Intellectual Property Rights	3
Industrial Biotechnology	3
Methods and Practice of Animal and Human Cell Culture	3
Handling of Animals for Experiments	3
Tissue and Organ Replacement Technology	3
Assisted Reproductive Technology	3
Plant Metabolism	3
Phytopharma	3
Medicinal Plants and Ethnobotany	3
Interdisciplinary Topics	3

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APPENDIX - II

List of courses that enable employability or entrepreneurship or skill development in the R-21 B.Tech – Bioinformatics

S.No	Semester (Year)	Course Name	Employability/ Entrepreneurship/ Skill development
1.	Semester I (First Year)	Engineering Mathematics I(B)	Skill development
2.	Semester I (First Year)	Engineering Physics I (C)	Skill development
3.	Semester I (First Year)	Basics of Electrical & Electronics Engineering	Skill development
4.	Semester I (First Year)	Engineering Graphics & Design	Skill development
5.	Semester I (First Year)	Introduction to C programming	Skill development
6.	Semester I (First Year)	Basic Engineering Products	Skill development
7.	Semester II (First Year)	Engineering Mathematics II(B)	Skill development
8.	Semester II (First Year)	Organic Chemistry	Skill development
9.	Semester II (First Year)	Programming for Problem Solving – II	Employability
10.	Semester II (First Year)	English Proficiency and Communication Skills	Skill development
11.	Semester II (First Year)	Technical English Communication	Skill development
12.	Semester II (First Year)	Constitution of India	Skill development

S.No	Semester (Year)	Course Name	Employability/ Entrepreneurship/ Skill development
13.	Semester II (First Year)	Workshop	Skill development
14.	Semester I (Second Year)	Probability and Statistics	Skill development
15.	Semester I (Second Year)	Unix Programming	Employability
16.	Semester I (Second Year)	Molecular Genetics	Entrepreneurship
17.	Semester I (Second Year)	Perl	Employability
18.	Semester I (Second Year)	Data Structures	Employability
19.	Semester I (Second Year)	Management Science	Skill development
20.	Semester II (Second Year)	Biochemistry	Skill development
21.	Semester II (Second Year)	Machine learning in life sciences	Employability
22.	Semester II (Second Year)	Immunoinformatics	Skill development
23.	Semester II (Second Year)	Environmental Science	Skill development
24.	Semester I (Third Year)	Computational Biology	Skill development
25.	Semester I (Third Year)	R Programming	Employability
26.	Semester I (Third Year)	Vaccinology	Entrepreneurship
27.	Semester I (Third Year)	Soft Skills Lab	Skill development
28.	Semester II (Third Year)	Molecular Phylogenetics	Employability
29.	Semester II (Third Year)	Data Science	Employability
30.	Semester II (Third Year)	Professional Communications Lab	Employability
31.	Semester II (Third Year)	Human Values, Professional Ethics & Gender Equity	Skill development
32.	Semester I (Forth Year)	Algorithms in Computational Biology	Employability
33.	Semester I (Forth Year)	Internet of Things	Employability
34.	Semester I (Forth Year)	Structural Bioinformatics	Employability

S.No	Semester (Year)	Course Name	Employability/ Entrepreneurship/ Skill development
35.	Third year & Fourth year	Molecular Interactions	Employability
36.	Third year & Fourth year	Metabolomics	Employability
37.	Third year & Fourth year	Biological Database	Employability
38.	Third year & Fourth year	Drug Design	Entrepreneurship
39.	Third year & Fourth year	Metabolic Pathways	Employability
40.	Third year & Fourth year	Systems Biology	Employability
41.	Third year & Fourth year	Neural Networks	Employability
42.	Third year & Fourth year	3D Bioprinting	Entrepreneurship
43.	Third year & Fourth year	Immunotechnology	Entrepreneurship
44.	Third year & Fourth year	Phage Display	Entrepreneurship
45.	Third year & Fourth year	DNA Barcoding for Conservation Strategy	Employability
46.	Third year & Fourth year	Bioethics and Intellectual Property Rights	Employability
47.	Third year & Fourth year	Industrial Biotechnology	Employability
48.	Third year & Fourth year	Methods and Practice of Animal and Human Cell Culture	Employability
49.	Third year & Fourth year	Handling of Animals for Experiments	Employability

S.No	Semester (Year)	Course Name	Employability/ Entrepreneurship/ Skill development
50.	Third year & Fourth year	Tissue and Organ Replacement Technology	Employability
51.	Third year & Fourth year	Assisted Reproductive Technology	Employability
52.	Third year & Fourth year	Biodiversity and Ecology	Employability
53.	Third year & Fourth year	Plant Metabolism	Employability
54.	Third year & Fourth year	Phytopharma	Employability
55.	Third year & Fourth year	Medicinal Plants and Ethnobotany	Entrepreneurship
56.	Third year & Fourth year	Interdisciplinary Topics	Employability

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APPENDIX – III

List of new courses in the R-21
B.Tech – Bioinformatics Curriculum

S.No	Semester (Year)	Course Name
1.	II/II	Machine learning in life sciences
2.	III/I	Vaccinology
3.	Electives	3D Bioprinting
4.	Electives	Immunotechnology
5.	Electives	Phage Display
6.	Electives	DNA Barcoding for Conservation Strategy
7.	Electives	Bioethics and Intellectual Property Rights
8.	Electives	Industrial Biotechnology
9.	Electives	Methods and Practice of Animal and Human Cell Culture
10.	Electives	Handling of Animals for Experiments
11.	Electives	Tissue and Organ Replacement Technology
12.	Electives	Assisted Reproductive Technology
13.	Electives	Biodiversity and Ecology
14.	Electives	Plant Metabolism
15.	Electives	Phytopharma
16.	Electives	Medicinal Plants and Ethnobotany
17.	Electives	Interdisciplinary Topics

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