DEPARTMENT OF BIOTECHNOLOGY

Feedback from Stakeholders and Action Taken

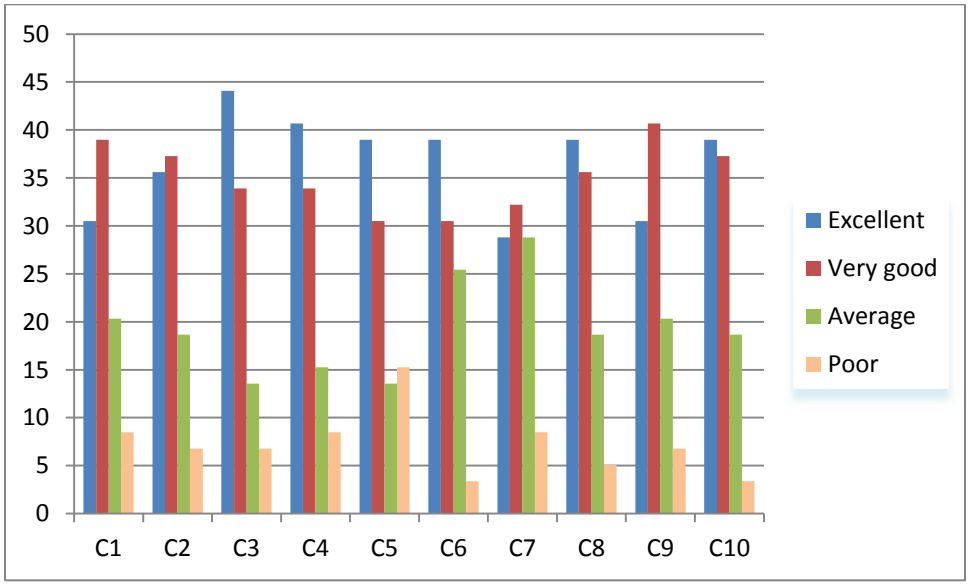
2019-20

Feedback Analysis 2019-20

The feedback from the parents, employers, alumnus, students and faculty members are analyzed using various criterions and evaluated below.

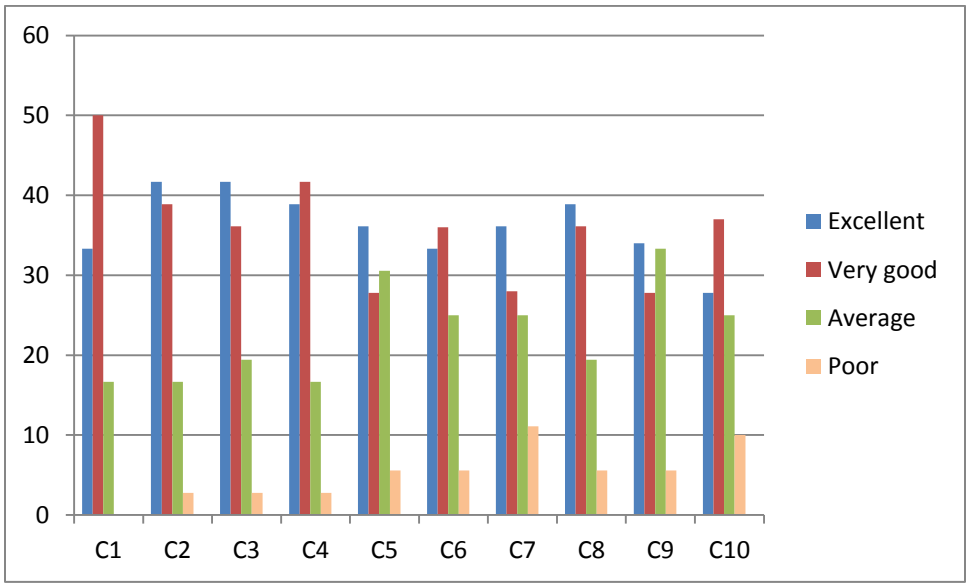
Student feedback

	Criterion used for analysis
C1	The curriculum is designed so as to enhance our employability
C2	The Courses studied by me have enhanced my knowledge as well as my skills and my capabilities
C3	The entire syllabus is completed in time
C4	Modern teaching aids, web-resources, multi-media, e-content etc. are used by most of the teachers while teaching
C5	The reference materials available in the University
C6	The curriculum is capable of supporting students in their higher studies
C7	The curriculum has the ability to foster entrepreneurial skills among the students
C8	How do you rate the sequence of units in the syllabus
C9	Rate the size of syllabus in terms of load on the student?
C10	How do you rate the objectives stated and relevance to the course content?



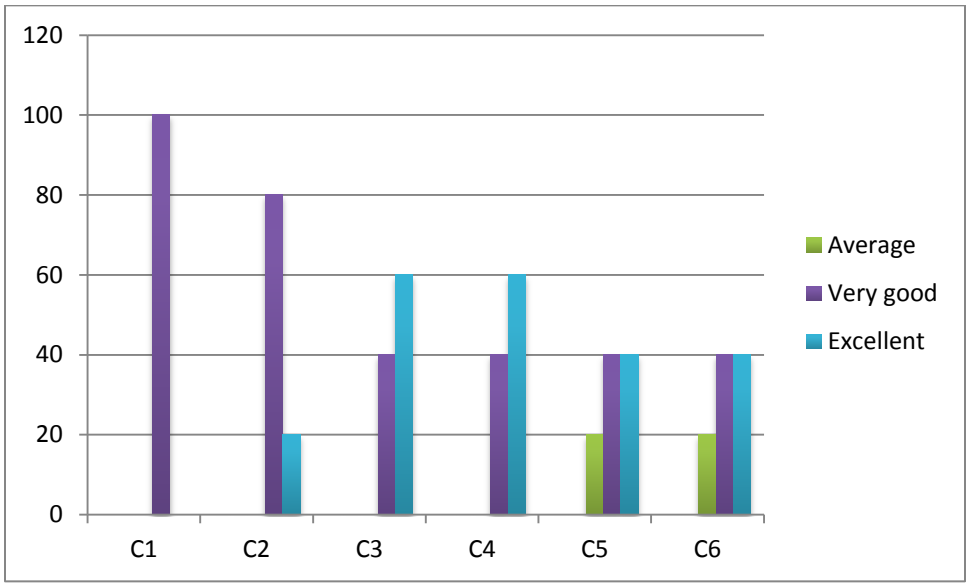
Alumni Feedback

	Criterion used for analysis
C1	How do you rate the relevance of the curriculum in relation to the Program
C2	How do you rate the sequence of the Courses included in the curriculum
C3	How do you rate the Course content in terms of its competence
C4	How do rate the sequence of the topics in the Courses
C5	How do you rate the offering of the Course in relation to the specializations
C6	How do you rate the offering of the electives in relation to the technological advancements
C7	How do you rate any new skills learnt in the due course of your study (other than syllabus)
C8	How do you rate the experiments in terms of suitability to the Program
C9	How do you rate the experiments in terms of the relevance to the real life application
C10	How do you rate the relevance of Courses that you have learnt in relation to your current job



Parents Feedback

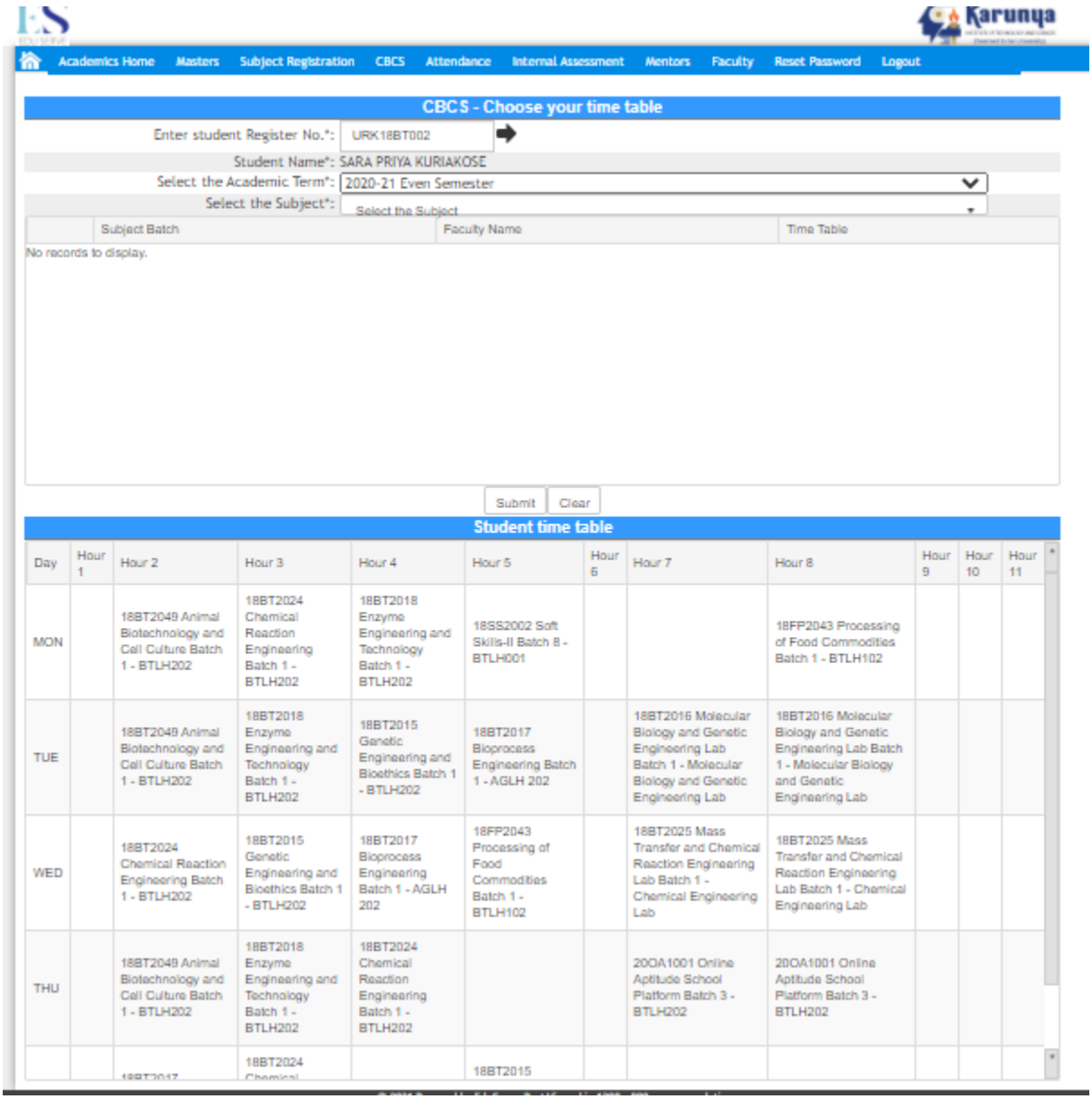
	Criterion used for analysis
C1	The Curriculum of the course is well designed and promotes learning experience to the students.
C2	The Curriculum incorporates technical advancements in the relevant field of study.
C3	Does the Choice Based Credit System (CBCS) adapted in the Curriculum improve the academic flexibility?
C4	Employability is given focus in the curriculum design.
C5	Value Add programmes like Communication Skills/Soft Skills development are added in the Curriculum.
C6	The Institution provides for inter-institutional credit transfers.



Action Taken

1. Placement training to be included in time table to improve the skill of student-

Annexure 1



Karunya

Academics Home | Masters | Subject Registration | CBCS | Attendance | Internal Assessment | Mentors | Faculty | Reset Password | Logout

CBCS - Choose your time table

Enter student Register No.*: URK18BT002

Student Name*: SARA PRIYA KURIAKOSE

Select the Academic Term*: 2020-21 Even Semester

Select the Subject*: Select the Subject

Subject Batch	Faculty Name	Time Table
No records to display.		

Submit | Clear

Student time table

Day	Hour 1	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8	Hour 9	Hour 10	Hour 11
MON		18BT2049 Animal Biotechnology and Cell Culture Batch 1 - BTLH202	18BT2024 Chemical Reaction Engineering Batch 1 - BTLH202	18BT2018 Enzyme Engineering and Technology Batch 1 - BTLH202	18SS2002 Soft Skills-II Batch 8 - BTLH001			18FP2043 Processing of Food Commodities Batch 1 - BTLH102			
TUE		18BT2049 Animal Biotechnology and Cell Culture Batch 1 - BTLH202	18BT2018 Enzyme Engineering and Technology Batch 1 - BTLH202	18BT2015 Genetic Engineering and Bioethics Batch 1 - BTLH202	18BT2017 Bioprocess Engineering Batch 1 - AGLH 202		18BT2016 Molecular Biology and Genetic Engineering Lab Batch 1 - Molecular Biology and Genetic Engineering Lab	18BT2016 Molecular Biology and Genetic Engineering Lab Batch 1 - Molecular Biology and Genetic Engineering Lab			
WED		18BT2024 Chemical Reaction Engineering Batch 1 - BTLH202	18BT2015 Genetic Engineering and Bioethics Batch 1 - BTLH202	18BT2017 Bioprocess Engineering Batch 1 - AGLH 202	18FP2043 Processing of Food Commodities Batch 1 - BTLH102		18BT2025 Mass Transfer and Chemical Reaction Engineering Lab Batch 1 - Chemical Engineering Lab	18BT2025 Mass Transfer and Chemical Reaction Engineering Lab Batch 1 - Chemical Engineering Lab			
THU		18BT2049 Animal Biotechnology and Cell Culture Batch 1 - BTLH202	18BT2018 Enzyme Engineering and Technology Batch 1 - BTLH202	18BT2024 Chemical Reaction Engineering Batch 1 - BTLH202			20OA1001 Online Aptitude School Platform Batch 3 - BTLH202	20OA1001 Online Aptitude School Platform Batch 3 - BTLH202			
			18BT2024		18BT2015						

2. To increase creativity in laboratory

Annexure 2

Example:

20BT2004	WORKSHOP PRACTICES IN BIOTECHNOLOGY	L	T	P	C
		0	0	2	1

Course Objectives:

1. To impart knowledge ongood Laboratory Practices
2. To impart knowledge on planning and procedures to develop models in biotechnology laboratories.
3. To impart knowledge on sequence of operations adopted in laboratories to fabricate models.

Course Outcomes:

1. Understand various laboratory tools and their applications.
2. Prepare basic solutions for chemical applications and their disposal.
3. Learn basic electrical processes involved in equipment and their trouble shooting.
4. Understand plumbing

5. Design and fabricate the various objects in sheet metal using hand tools.
6. Apply manufacturing process for various biotech applications.

List of Experiments:

1. Measurements, tools and its usages
2. Fundamental electricals, electronics and trouble shooting
3. Basics of laboratory safety, first aid and disposal process
4. Basics of calculations and measurements
5. Introductory plumbing
6. Computer hardware and installations
7. Sheet metal fabrication and carpentry

3. Syllabus to be made application oriented

Annexure 3

Category 5: Professional Core

No.	Course Code	Course Title	Credit
1	20BT1002	Basics of Python Programming	2:0:2:3
2	20BT2003	Cell Biology	3:0:0:3
3	20BT2007	Bio-analytical Techniques	3:0:0:3
4	20BT2008	Bio-analytical Techniques Lab	0:0:3:1.5
5	20BT2009	Biochemistry	3:0:0:3
6	20BT2010	Biochemistry Lab	0:0:3:1.5
7	20BT2011	Microbiology	3:0:0:3
8	20BT2012	Microbiology Lab	0:0:3:1.5
9	20BT2013	Fluid Mechanics	3:1:0:4
10	20BT2014	Fluid Mechanics and Heat transfer Lab	0:0:3:1.5
11	20BT2016	Bioprocess Lab	0:0:3:1.5
12	20BT2017	Molecular Biology	3:0:0:3
13	20BT2018	Genetic Engineering	3:0:0:3
14	20BT2019	Molecular Biology and Genetic Engineering Lab	0:0:3:1.5
15	20BT2020	Bioprocess Engineering	3:0:0:3
16	20BT2021	Enzyme Engineering and Technology	3:0:0:3
17	20BT2023	Downstream Processing	3:0:0:3
18	20BT2024	Downstream Processing Lab	0:0:3:1.5
19	20BT2025	Immunology	3:0:0:3
20	20BT2026	Cell Biology and Immunology Lab	0:0:3:1.5
21	20BT2029	Biochemical Thermodynamics	3:0:0:3
22	20BT2030	Concepts of Bioinformatics	2:0:2:3
23	20BT2052	Plant and Animal Tissue Culture Lab	0:0:4:2
24	20BT2054	Environmental Biotechnology	3:0:0:3
25	20BT2059	IoT in Biotechnology	2:0:0:2
26	20BT2068	Principles of Plant Biotechnology and Applications	3:0:0:3
27	20BT2069	Advances in Animal Biotechnology	3:0:0:3
		Total Credits	**68**

4. Focus needs to be given on topics on how a biotech industry works

Annexure 4

5. More practical sessions/ hand on training/longer lab sessions

Annexure 5

Table 2
PROFESSIONAL ELECTIVE COURSES

S. No.	Course Code	Course Title	Hours per Week			Credits
			L	T	P	
1	20BT3062	Industrial Biotechnology	3	0	0	3
2	20BT3063	Pharmaceutical Technology and clinical trial	2	0	2	3
3	20BT3064	Bioinformatics and Basics of R programming	2	0	2	3
4	20BT3065	NGS Data Analysis	3	0	0	3
5	20BT3022	Introductory AI in Biotechnology	3	0	0	3
6	20BT3030	Genomics and proteomics	3	0	0	3
7	20BT3032	Entrepreneurship and Management	3	0	0	3
8	20BT3066	Algae Biotechnology	2	0	2	3
9	20BT3067	Tissue Engineering and Stem Cell Technology	3	0	0	3
10	20BT3010	Agricultural and Food Biotechnology	3	0	0	3
11	20BT3027	Nanobiotechnology	3	0	0	3
12	20BT3031	Advanced Environmental Biotechnology	3	0	0	3
13	20BT3012	Bioethics and Biosafety	3	0	0	3
14	20BT3068	Metabolic Engineering for Industrial Production	3	0	0	3
15	20BT3069	Human anatomy, physiology and health education	3	0	0	3
16	20BT3070	Vaccine Technology	3	0	0	3

6. The lab and theory to be conducted parallel

Annexure 6

Semester-3

S.No	Course Code	Course Title	Hours/Week			Credits
			L	T	P	
1	12MA2009	Probability and Statistics using R programming	2	1	0	3
2	20BT2015	Bioprocess Principles	3	0	0	3
3	20BT2009	Biochemistry	3	0	0	3
4	20BT2011	Microbiology	3	0	0	3
5	20BT2005	Basics of Industrial Biotechnology	3	0	0	3
6	20BT2012	Microbiology Lab	0	0	3	1.5
7	20BT2010	Biochemistry Lab	0	0	3	1.5
8	20MS2004	Entrepreneurship and Product Development	3	0	0	3
		Open Elective I	3	0	0	3
Total						**24**

Semester-4

S.No	Course Code	Course Title	Hours/Week			Credits
			L	T	P	
1	20MS2005	Soft Skills	3	0	0	1
2	20BT2003	Cell biology	3	0	0	3
3	20BT2007	Bio-analytical Techniques	3	0	0	3
4	20BT2013	Fluid Mechanics	3	1	0	4
5	20BT2029	Biochemical Thermodynamics	3	0	0	3
6	19CS2012	Artificial Intelligence for Biotechnology	3	0	0	3
7	20BT2008	Bio-analytical Techniques Lab	0	0	3	1.5
8	20BT2014	Fluid mechanics and Heat transfer Lab	0	0	3	1.5
		Professional Elective – 1	3	0	0	3
Total						**23**

Semester-5

S.No	Course Code	Course Title	Hours/Week			Credits
			L	T	P	
1	20BT2020	Bioprocess Engineering	3	0	0	3
2	20BT2017	Molecular Biology	3	0	0	3
3	20BT2068	Principles of Plant Biotechnology and Applications	3	0	0	3
4	20BT2025	Immunology	3	0	0	3
5		Professional Elective-2	3	0	0	3
6		Professional Elective-3	3	0	0	3
7	20BT2016	Bioprocess Lab	0	0	3	1.5
8	20BT2026	Cell Biology and Immunology Lab	0	0	3	1.5
9	20BT2059	IoT in Biotechnology	2	0	0	2
Total						**23**

7. Animal Biotechnology to be included as mandatory Course

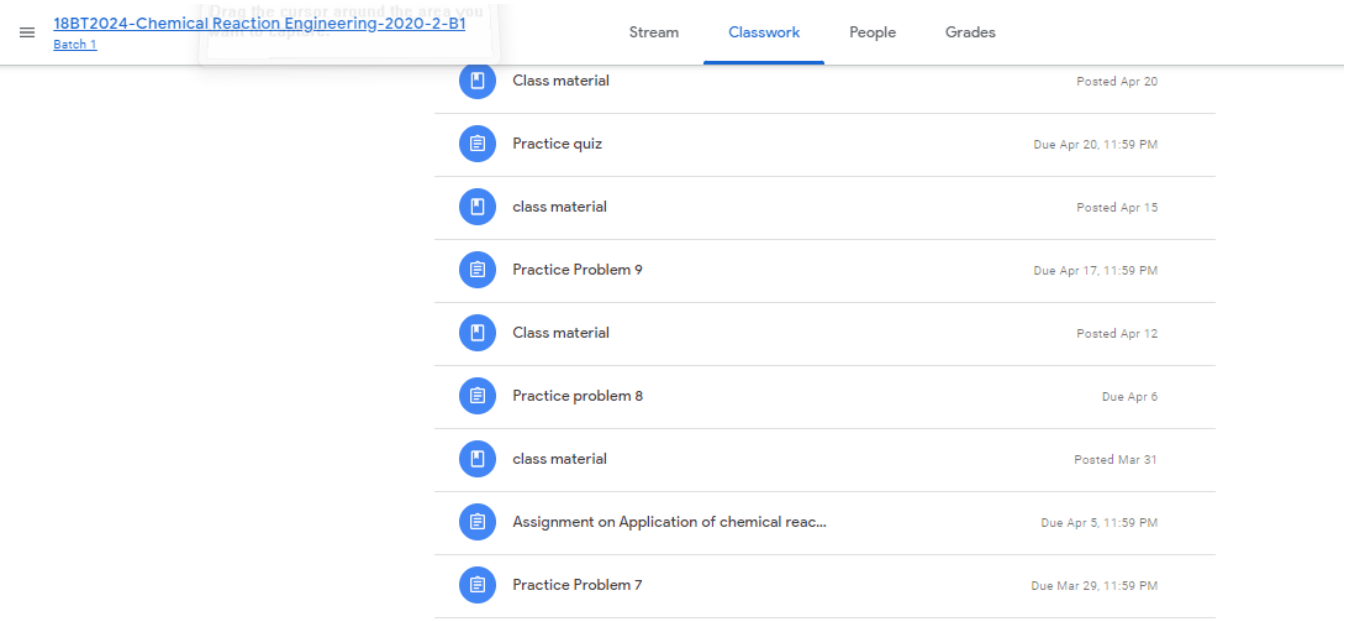
Annexure 7

Category 5: Professional Core

No.	Course Code	Course Title	Credit
1	20BT1002	Basics of Python Programming	2:0:2:3
2	20BT2003	Cell Biology	3:0:0:3
3	20BT2007	Bio-analytical Techniques	3:0:0:3
4	20BT2008	Bio-analytical Techniques Lab	0:0:3:1.5
5	20BT2009	Biochemistry	3:0:0:3
6	20BT2010	Biochemistry Lab	0:0:3:1.5
7	20BT2011	Microbiology	3:0:0:3
8	20BT2012	Microbiology Lab	0:0:3:1.5
9	20BT2013	Fluid Mechanics	3:1:0:4
10	20BT2014	Fluid Mechanics and Heat transfer Lab	0:0:3:1.5
11	20BT2016	Bioprocess Lab	0:0:3:1.5
12	20BT2017	Molecular Biology	3:0:0:3
13	20BT2018	Genetic Engineering	3:0:0:3
14	20BT2019	Molecular Biology and Genetic Engineering Lab	0:0:3:1.5
15	20BT2020	Bioprocess Engineering	3:0:0:3
16	20BT2021	Enzyme Engineering and Technology	3:0:0:3
17	20BT2023	Downstream Processing	3:0:0:3
18	20BT2024	Downstream Processing Lab	0:0:3:1.5
19	20BT2025	Immunology	3:0:0:3
20	20BT2026	Cell Biology and Immunology Lab	0:0:3:1.5
21	20BT2029	Biochemical Thermodynamics	3:0:0:3
22	20BT2030	Concepts of Bioinformatics	2:0:2:3
23	20BT2052	Plant and Animal Tissue Culture Lab	0:0:4:2
24	20BT2054	Environmental Biotechnology	3:0:0:3
25	20BT2059	IoT in Biotechnology	2:0:0:2
26	20BT2068	Principles of Plant Biotechnology and Applications	3:0:0:3
27	20BT2069	Advances in Animal Biotechnology	3:0:0:3
		Total Credits	**68**

8. The curriculum needs to support self-learning among students

Annexure 8



9. To provide training in programming language

Annexure 9

20BT1002	BASICS OF PYTHON PROGRAMMING	L	T	P	C
		2	0	2	3

Course Objectives:

To impart knowledge on

1. Fundamental programming constructs such as variables, arrays, loops, subroutines and input/output in Python.
2. Concepts of modules in Python and Biopython.
3. Utilization of Biopython packages in big data analytics

Course Outcomes:

The students will be able to

1. Understand, write, compile, and run Python programs.
2. Analyze Python structures that implement decisions, loops, and store arrays and use these structures in a well designed, OOP program.
3. Create Python programs that make use of various modules and packages
4. Understand regular expressions and extract required information from file and databases.
5. Relate and arrange information from multiple files
6. Apply the principles of object-oriented programming and well-documented programs in the Python language, including use of the Bio-python packages in big data analytics

Module 1: Install and run Python program **(8 Hours)**

System command lines and files, module imports and reloads. The IDLE user interface, Numeric type's basis, Numbers in action, Comparison, Decimal and Fraction type, Sets, Booleans

Module 2: Strings **(8 Hours)**

String literals, Strings in action, String methods, the original string module, String formatting expressions

Module 3: Lists and files **(8 Hours)**

Lists, Lists in action, basic operations, comprehensions, indexing, slicing, matrixes

Module 4: Tuples **(6 Hours)**

Tuples in action, compare list and tuples, files and examples.

Module 5: Control statement in python **(8 Hours)**

If statement, Python syntax rules, truth test, while loop, break, continue, pass, for loops, loop coding techniques, examples.

Module 6: Modules and package **(7 Hours)**

Module creation, module usage, package import basics and examples, Bio-python.

Lists of Experiments:

1. Demonstrate the working of 'id' and 'type' functions.
2. Write a Python program to find all prime numbers within a given range
3. Write a Python program to print 'n terms of Fibonacci series using iteration
4. Write a Python program demonstrate use of slicing in string

20BT2055	MATLAB PROGRAMMING	L	T	P	C
		3	0	0	3

Course Objective:

1. To impart knowledge on matlab installation, configuration and basic syntax.
2. To introduce them to various matrix, vector, data and string operations, functions and advanced matlab operations for multivariate data analysis, modelling, optimization tool
3. To understand the applications of Matlab for various biological data analysis.

Course Outcome:

1. Identify installation, configuration and environmental setup of Matlab.
2. Demonstrate the usage of basic syntax and structure of Matlab
3. Apply knowledge of data types, operators and control structures to pseudocode
4. Analyze script functionality and offer improved performance in structure
5. Appraise structural validity, reproducibility of used Matlab functions
6. Formulate biological applications in areas such as sequence processing, sequence analysis.

Module 1:Fundamentals (7)

Matlab Local Environment Setup, Different window interface: script, and command prompt; working directory, Variables, Naming Variables, Workspace variables, clearing variables, and command windows, output formats, Creating Vectors - Creating Matrices. Basic structure of matlab scripts, main function

Module 2:Matlab Commands (9)

Commands for Managing a Session - Commands for Working with the System-Input and Output Commands (on screen input output for text, numeric data), data import from txt, xls, website data, exporting data into txt file, structure, Vector, Matrix and Array creation, manipulation, searching, arithmetic operation, statistical summary, Cell array, M-Files Creating and Running Script File. Data input and output to and from matlab script, environment.

Module3:Data Types, Operators (6)

Data Types Available in MATLAB (Cell, character, datetime, floating-point, integer, logical, string, structure, table, timetable) Data Type Conversion - Determination of Data Types, storing data into cell and extracting from cell, Operators, Arithmetic, relational, and logical operators, Data structure, Table operation

Module4:Control Structures (6)

Control structures - Decision Making, Loops and conditional Statements, 'for', 'if else', 'while' Switch Case. String comparison, terminating control structure: Continue, pause, break, return

Module 5:Advanced Matlab (7)

Functions, anonymous function, function without input or output arguments, specialized inbuild functions (e.g. crossval, bootstrp). Primary and Sub-Functions, Nested Functions, Private Functions, Global Variables, Matlab Plotting: line, scatter, bar plot, histogram, box-plot, subplot, figure attributes and properties

Module 6:Matlab for Biological Applications (10)

Action Taken Report

Students Feedback	
Placement training to be included in time table to improve the skill of student	Placement training was conducted in 10th hour Annexure 1
To increase creativity in laboratory	New experiments were included/ revised. Annexure 2
Syllabus to be made application oriented	New courses on Entrepreneurship for Bioengineers (20BT2056), IoT in Biotechnology(20BT2059), Principles of Plant Biotechnology and Applications (20BT2068), Advances in Animal Biotechnology(20BT2069) were added Annexure 3
Alumni Feedback	
Focus needs to be given on topics on how a biotech industry works	Webinar/ Alumni interaction programmes were conducted Annexure 4
More practical sessions/ hand on training/longer lab sessions	Elective lab sessions were included for students to choose. Annexure 5
The lab and theory to be conducted parallel	lab sessions are conducted parallel. Annexure 6
Parents Feedback	
To provide more industrial exposure/ keeping the current trend	Industrial visits will be arranged for the students.
Animal Biotechnology to be included as mandatory Course	20BT2069 Advances in Animal Biotechnology was added as a professional core Annexure 7
Faculty Feedback	
The curriculum needs to support self-learning among students	Multiple QA components were included. Annexure 8
Employer Feedback	
To provide training in programming language	Basics of Python Programming (20BT1002), Matlab Programming(20BT2055) Annexure 9
To improve technical knowledge in students	Quizzes were conducted in IA/ QA Annexure 8