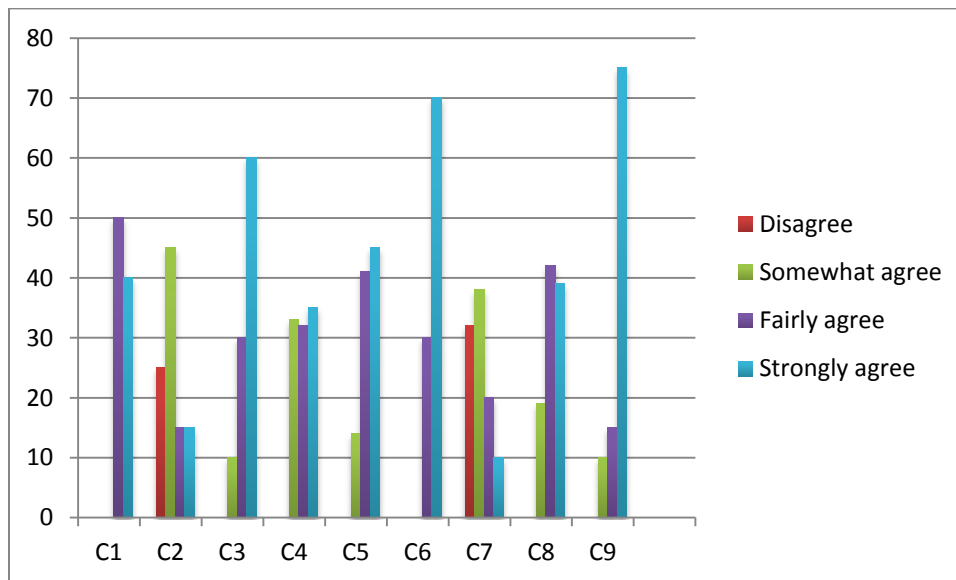


**DEPARTMENT OF BIOTECHNOLOGY
 FEEDBACK FROM STAKEHOLDERS AND ACTION TAKEN
 (2015-16)**

Feedback Analysis

Students' feedback

	Criterion used for analysis
C1	Content of the course suitable to apply the knowledge of mathematics, science and engineering
C2	Course helped to analyze the complex problems in life science
C3	Research tools to arrive at valid conclusions
C4	Use of modern engineering tools for modeling and solving complex problem
C5	Course make more sensitive towards lingering environmental issues
C6	Inculcated ethical principles
C7	Competency in Biotechnology
C8	Ability to design, analyze and interpret experimental data
C9	Design and model bioprocess



Action Taken

To improve the curriculum to acquire competency in Biotechnology

Annexure 1

KARUNYA UNIVERSITY
(Karunya Institute of Technology and Sciences)
(Declared as deemed to be university under Sec.3 of the UGC Act, 1956)
Karunya Nagar, Coimbatore-641 114
DEPARTMENT OF BIOSCIENCES AND TECHNOLOGY
PROGRAMME -BIOTECHNOLOGY 12.04.2017

Sub: Minutes for Board of Studies Meeting of the Department of Biotechnology held on 12.04.2017- reg.

Internal Members:

1. Dr. J. Jannet Vennila	: Director and Chairman
2. Dr. R. S. David Paul Raj	: PC & Member
3. Dr. V.M. Berlin Grace	: Member
4. Mr. P. Muthusamy	: Member
5. Dr. M. Lakshmi Prabha	: Member
6. Dr. RT. Narendrakannan	: Member
7. Dr. Reya Issac	: Member
8. Dr. G. Gnanavel	: Member

External Members:

1. Dr. M. L. StephenRaj, Head, Department of Biotechnology, MEPCO Schlenk Engineering College, Sivakasi (Academia)
2. Mr. K. C. Thirumoorthy, Director & CEO, M/s TRM Biotech Private Limited, Tiruchengode (Industry)
3. Mrs. Mercy Nisha Pauline, Assistant Professor, Government College of Technology, Coimbatore (Alumni)

The Minutes of Board of Studies Meeting held on 12-04-2017 for the Department of Biotechnology is herewith enclosed for your kind perusal.

The meeting started with an opening prayer by Dr. David Paul Raj

Points Discussed:

1. The Program Educational Objectives (PEO), Program Outcome(PO) and Program Specific Objectives(PSO) were framed and discussed.
2. It is proposed to introduce the following Course components for B. Tech (Biotechnology) Programme from 2017 onwards. Revision of curriculum towards employability was discussed.

B.TECH BIOTECHNOLOGY – 2017 batch
COURSE COMPONENTS

Table 1

Sl. No.	Sub. Code	General – 3 credits	
		Subject	
1	New Code	Value Education I / II	
Subject Total			2

Table 2

Sl. No.	Sub. Code	Basic Sciences – 12 credits	Credits
		Subject	
1	17BT2001	Basics of Biochemistry	3:1:0
2	New Code	Numerical Methods	3:1:0
3	New Code	Probability and Statistics	3:1:0
Subjects Total			12

Table 3

Sl. No.	Sub. Code	Engineering Sciences & Technical Arts – 7 credits	Credits
		Subject	
1	17BT2003	Principles of Chemical Engineering	3:0:0
2	New Code	Aptitude and Soft Skills	4:0:0
Subjects Total			7

Table 4

Sl.No	Sub. Code	Programme Core – 75 credits & a full / part semester project	Credits
		Name of the Subject	
1	17BT2002	Biochemistry Lab	0:0:2
2	17BT2004	Cell Biology	3:0:0
3	17BT2005	Microbiology	3:0:0
4	17BT2006	Microbiology Lab	0:0:2
5	17BT2007	Instrumental Methods of Analysis	3:0:0
6	17BT2008	Instrumental Methods of Analysis Lab	0:0:2
7	17BT2009	Basic Industrial Biotechnology	3:0:0
8	17BT2010	Metabolism and Bioenergetics	3:1:0
9	17BT2011	Bioprocess Principles	3:0:0
10	17BT2012	Bioprocess Lab	0:0:2
11	17BT2013	Fluid Mechanics for Biotechnologists	3:1:0
12	17BT2014	Fluid Mechanics and Heat Transfer Lab	0:0:2
13	17BT2015	Molecular Biology	3:0:0
14	17BT2016	Genetic Engineering and Bioethics	3:0:0
15	17BT2017	Molecular Biology and Genetic Engineering Lab	0:0:2
16	17BT2018	Bioorganic Principles	3:0:0
17	17BT2019	Bioreactor Engineering	3:0:0
18	17BT2020	Enzyme Engineering	3:0:0
19	17BT2021	Immunology	3:0:0
20	17BT2022	Cell Biology and Immunology Lab	0:0:2
21	17BT2023	Chemical Reaction Engineering	3:0:0
22	17BT2024	Downstream Processing	3:0:0
23	17BT2025	Downstream Processing Lab	0:0:2
24	17BT2026	Mechanical Operations	3:0:0
25	17BT2027	Chemical and Biothermodynamics	3:0:0
26	17BT2028	Heat and Mass Transfer Operations	3:0:0
27	New Code	Analytical Bioinformatics	3:0:0
Total			75
28	17BT2998	Part/ Full Semester Project	0:0:12

17BT2999		0:0:18
Total		87/93

Table 5

List of Professional Electives – 27/21 Credits		
Code No.	Name of the Subject	Credits
17BT2029	Plant physiology and Crop Improvement	3:0:0
17BT2030	Plant Genetic Engineering	3:0:0
17BT2031	Agriculture and Biomass Energy	3:0:0
17BT2032	Horticultural Crop Production, Management and Green House Technology	3:0:0
17BT2033	Developmental Biology	3:0:0
17BT2034	Human Genetics and Genomics	3:0:0
17BT2035	Vaccine Biotechnology	3:0:0
17BT2036	Animal Biotechnology and Cell Culture Techniques	3:0:0
17BT2037	Cancer Biology	3:0:0
17BT2038	Biopharmaceutical Technology	3:0:0
17BT2039	Biochemical Engineering	3:0:0
17BT2040	Metabolic Engineering	3:0:0
17BT2041	Process Equipment Design	3:0:0
17BT2042	Pilot plant & Scale Up practice	3:0:0
17BT2043	Industrial Safety & Hazard Analysis	3:0:0
17BT2044	Industrial Effluent Treatment	3:0:0
17BT2045	Pollution Control and Engineering	3:0:0
17BT2046	Mechanical Operation Lab	0:0:2
17BT2047	Plant and Animal Tissue Culture Lab	0:0:2
17BT2048	Bioprocess control and Instrumentation	3:0:0
New Code	Clinical Database management	3:0:0
New Code	Clinical database management Lab	0:0:2
New Code	Biological Big Data Analysis	3:0:0
New Code	Python Programming	3:0:0
Subjects offered to other Departments		
17BT2049	Applied Medical Biochemistry	3:0:0
17BT2050	Medical Biochemistry Lab	0:0:1
17BT2051	Human Physiology and Anatomy	3:0:0
17BT2052	Biomaterials and Artificial Organs	3:0:0
17BT2053	Occupational Safety Management	3:0:0
17BT2054	Medical Waste Treatment	3:0:0
17BT2055	Cell Biology and Immunology	3:0:0
17BT2056	Tissue Engineering	3:0:0
17BT2057	Techniques in Pathology and Microbiology	3:0:0
17BT2058	Microbiology and Immunology	3:0:0
New Code	Mini Project	0:0:2
New Code	Implant Training	0:0:1
New Code	Internship	0:0:8

Table 6

List of University Electives – 6 Credits		
Code No.	Name of the Subject	Credits
17BT2059	Analytical Instrumentation	3:0:0
17BT2060	Biology in Everyday Life	3:0:0
17BT2061	Biotechnology and Environment	3:0:0
17BT2062	Entrepreneurship in Bioengineering	3:0:0
17BT2063	Pollution Control	3:0:0

3. As the following chemical engineering subjects require the aspects of biotechnology, the CDC members insisted that the syllabus of the following subjects offered for Biotechnology students to be framed and handled only by biotech faculties with chemical engineering background

- 14ME2014 Engineering Thermodynamics (3:0:0)
- 14CE2003 Mechanics of Fluids (3:1:0)

Hence, it is proposed to replace 14CE2003 Mechanics of Fluids (3:1:0) with 17BT2013 Fluid Mechanics for Biotechnologists (3:1:0) and 14ME2014 Engineering Thermodynamics (3:0:0) with 17BT2027 Chemical and Biothermodynamics (3:0:0) in core list of B. Tech (Biotechnology) 2016 Batch.

**B.TECH BIOTECHNOLOGY – 2016 batch
COURSE COMPONENTS**

Table 4

Sl.No	Sub. Code	Programme Core – 75 credits & a full / part semester project	Credits
		Name of the Subject	
1	14BT2002	Biochemistry Lab	0:0:2
2	14BT2004	Cell Biology	3:0:0
3	14BT2005	Microbiology	3:0:0
4	14BT2006	Microbiology Lab	0:0:2
5	14BT2007	Basic Industrial Biotechnology	3:0:0
6	14BT2008	Metabolism and Bioenergetics	3:1:0
7	14BT2009	Bioprocess Principles	3:0:0
8	14BT2010	Bioprocess Lab	0:0:2
9	14BT2011	Molecular Biology	3:0:0
10	14BT2012	Genetic Engineering and Bioethics	3:0:0
11	14BT2013	Molecular Biology and Genetic Engineering Lab	0:0:2
12	14BT2014	Bioorganic Principles	3:0:0
13	14BT2015	Bioreactor Engineering	3:0:0
14	14BT2016	Enzyme Engineering	3:0:0
15	14BT2017	Immunology	3:0:0
16	14BT2018	Cell Biology and Immunology Lab	0:0:2

	14BT2019	Chemical Reaction Engineering	3:0:0
18	14BT2020	Downstream Processing	3:0:0
19	14BT2021	Downstream Processing Lab	0:0:2
20	14BT2022	Mechanical Operations	3:0:0
21	14BT2001	Analytical Bioinformatics	3:0:0
22	17BT2027	Chemical and Biothermodynamics	3:0:0
23	17BT2013	Fluid Mechanics for Biotechnologists	3:1:0
24	14FP2005	Heat and Mass Transfer	3:0:0
25	14FP2003	Fluid Mechanics and Heat Transfer Lab	0:0:2
26	14BT2002	Instrumental Methods of Analysis	3:0:0
27	14BT2012	Instrumental Methods of Analysis Lab	0:0:2
		Total	75
	14BT2999	Full Semester Project	0:0:20
		Total	95

4. It is proposed to offer a Diploma in Biotechnology skill enhancement with the following domains

- o Domain-1: Clinical Database Management
- o Domain-2: Fermentation Technology

The credit distribution for the diploma is proposed as follows:

Value Education = 2 credits

Soft Skills = 2 credits

3 Theory x 3 credits = 9 credits

2 Lab x 4 credit = 8 credits

Half Semester Project = 12 credits

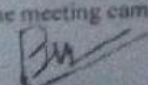
Industry Internship = 8 credits

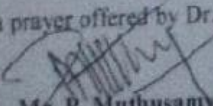
Total = 41 credits

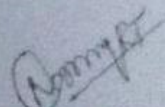
5. It is proposed to pass the following online MOOC SWAYAM courses in the B. Tech Biotechnology Curriculum from 2017 onwards

- i. Plant Science (3 Weeks)
- ii. Genetics (4 weeks)
- iii. Cell Biology (3 weeks)
- iv. Developmental Biology (4 weeks)
- v. Biochemistry (10 weeks)
- vi. Bioreactors (5 weeks)
- vii. Engineering Thermodynamics (9 weeks)
- viii. Bioenergy (5 weeks)
- ix. Mechanical Operations (4 weeks)
- x. Stress Management (4 weeks)

The meeting came to a close with a prayer offered by Dr. Reya Issac


Dr. V. M. Berlin Grace
(Internal Member)


Mr. P. Muthusamy
(Internal Member)


Dr. RT. Narendrakannan
(Internal Member)

MLP
Dr. M. Lakshmi Prabha
(Internal Member)

Reya
Dr. Reya Issac
(Curriculum coordinator)

G. Guanavel
Dr. G. Guanavel
(Internal Member)

K. C. Thirumoorthi
Mr. K. C. Thirumoorthi
(External Member)

JML 5/12/15
Mrs. J. Mercy Nisha Pauline
(Alumni)

MML 5/12/15
Dr. M. L. Stephen Raj
(External Member)

Dr. R.S. David Paul Raj
Dr. R.S. David Paul Raj
(Internal Member/PC)

J + V
Dr. J. Jannet Vennila
(HOD, BST and Chairman)

Action Taken Report

Students Feedback	
To improve the curriculum to acquire competency in Biotechnology	New Course in Fluid Mechanics for Biotechnologists (17BT2013), Heat and Mass Transfer Operations (17BT2028), Chemical and Bio-thermodynamics , Plant Genetic Engineering, Agriculture And Biomass Energy, Plant and Animal Tissue Culture Lab, Bioprocess Control and Instrumentation, Analytical Instrumentation were introduced in 2017 (Annexure 1)
To improve curriculum so as to design solutions for bio based problems	New courses were introduced in curriculum to improve technical knowledge and skills in students. (Annexure 1)