

**FORM**ISO 9001: 2015- KLETECH
Department of Biotechnology

Document #: FMCD2004

Rev: 1.0

Title: Curriculum Structure-Semester wise (2018-22 batch)

Page of

Year:

KLE Technological University
II Year to IV Year Bachelor of Engineering Biotechnology
Curriculum Structure-2018-22**III Semester**

No.	Course Code	Course	Category	L-T-P	Credits	Contact Hours	ISA Marks	ESA Marks	Exam Duration
1	15EMAB205	Numerical Methods and Integral Transforms	BS	4-0-0	4	4	50	50	03 Hours
2	15EBTC201	Microbiology	PSC	4-0-0	4	4	50	50	03 Hours
3	15EBTC202	Biochemistry	PSC	4-0-0	4	4	50	50	03 Hours
4	15EBTF201	Bioprocess Calculations	ES	4-0-0	4	4	50	50	03 Hours
5	17EBTF201	Unit Operations-I	ES	3-0-0	3	3	50	50	03 Hours
6	15EBTP201	Microbiology Lab	PSC	0-0-1	1	2	80	20	03 Hours
7	15EBTP202	Biochemistry Lab	PSC	0-0-1	1	2	80	20	03 Hours
8	17EBTP201	Unit Operations-I Lab	ES	0-0-1	1	2	80	20	03 Hours
Total				19-0-3	22	25			

Theory = 05

Lab = 03

Bengard
HEAD
DEPT. OF BIOTECHNOLOGY
K.L.E. TECHNOLOGICAL,
UNIVERSITY, HUBBALLI-31.



FORM
ISO 9001: 2015- KLETECH
Department of Biotechnology

Document #: FMCD2004

Rev: 1.0

Title: Curriculum Structure-Semester wise (2018-22 batch)

Page of

Year:

IV Semester

S. No.	Course Code	Course	Category	L-T-P	Credits	Contact Hours	ISA Marks	ESA Marks	Exam Duration
1	15EMAB210	Biostatistics	BS	3-1-0	4	5	50	50	03 Hours
2	15EBTC203	Immunology	PSC	3-0-0	3	3	50	50	03 Hours
3	17EBTC201	Enzyme Technology	PSC	4-0-0	4	4	50	50	03 Hours
4	15EBTC205	Cell &Molecular Biology	PSC	4-0-0	4	4	50	50	03 Hours
5	17EBTF202	Unit Operations-II	ES	3-0-0	3	3	50	50	03 Hours
6	15EBTP204	Enzyme Technology Lab	PSC	0-0-1	1	2	80	20	03 Hours
7	15EBTP205	Cell & Molecular Biology Lab	PSC	0-0-1	1	2	80	20	03 Hours
8	17EBTP202	Unit Operations-II Lab	PSC	0-0-1	1	2	80	20	03 Hours
			Total	17-1-3	21	25			

Theory = 05
Lab = 03

P. Srinivas

HEAD
DEPT. OF BIOTECHNOLOGY
K.L.E. TECHNOLOGICAL,
UNIVERSITY, HUBBALLI-31.



FORM
ISO 9001: 2015- KLETECH
Department of Biotechnology

Document #: FMCD2004

Rev: 1.0

Title: Curriculum Structure-Semester wise (2018-22 batch)

Page of

Year:

V Semester

S. No.	Course Code	Course	Category	L-T-P	Credits	Contact Hours	ISA Marks	ESA Marks	Exam Duration
1	15EBTC301	Genetic Engineering & Applications	PSC	4-0-0	4	4	50	50	03 Hours
2	20EBTC301	Bioinformatics	PSC	4-0-0	4	4	50	50	03 Hours
3	15EBTC303	Reaction Engineering	PSC	4-0-0	4	4	50	50	03 Hours
4	15EBTC304	Biological Thermodynamics	PSC	3-0-0	3	3	50	50	03 Hours
5	15EBTC305	Research Methodology	PSC	3-0-0	3	3	50	50	03 Hours
6	15EBTW301	Mini Project	PRJ	0-0-3	3	9	50	50	03 Hours
7	15EBTP301	Genetic Engineering & Immunotechnology Lab	PSC	0-0-1	1	2	80	20	03 Hours
8	15EBTP302	Bioinformatics Lab	PSC	0-0-1	1	2	80	20	03 Hours
		Total		18-0-5	23	31			

Theory = 05
Lab = 02
Mini Project = 01

Bengaluru
HEAD
DEPT. OF BIOTECHNOLOGY
K.L.E. TECHNOLOGICAL,
UNIVERSITY, HUBBALLI-31.

**FORM**

ISO 9001: 2015- KLETECH

Department of Biotechnology

Document #: FMCD2004

Rev: 1.0

Title: Curriculum Structure-Semester wise (2018-22 batch)

Page of

Year:

VI Semester

No.	Course Code	Course	Category	L-T-P	Credits	Contact Hours	ISA Marks	ESA Marks	Exam Duration
1	15EBTC306	Bioprocess Engineering	PSC	4-0-0	4	4	50	50	03 Hours
2	19EBTC302	Bioprocess Control & Automation	PSC	4-0-0	4	4	50	50	03 Hours
3	XXEBTE3XX	Program Elective - 01	PE	3-0-0	3	3	50	50	03 Hours
4	XXEBTE3XX	Program Elective - 02	PE	3-0-0	3	3	50	50	03 Hours
5	16EHSC301	Humanities – 01 (PALR)	HSC	3-0-0	3	3	50	50	03 Hours
6	15EBTW302	Minor Project	PRJ	0-0-6	6	18	50	50	03 Hours
7	15EBTP303	Bioprocess Engineering Lab	PSC	0-0-1.5	1.5	3	80	20	03 Hours
8	19EBTP301	Bioprocess Control & Reaction Engineering Lab	PSC	0-0-1.5	1.5	3	80	20	03 Hours
Total				17-0-9	26	41			

For VI Sem		Program Electives	
Vertical I (BPE)		Vertical-II (MBT)	
18EBTE301	Bioprocess Plant Design and economics	15EBTE302	Insilico Modeling and Drug Design
18EBTE401	Bioprocess Modeling and simulation	19EBTE301	Bioanalytical Techniques

Theory = 05 Lab = 02 Minor Project = 01

Beengir
HEAD
DEPT. OF BIOTECHNOLOGY
K.L.E. TECHNOLOGICAL,
UNIVERSITY, HUBBALLI-31.



FORM
ISO 9001: 2015- KLETECH
 Department of Biotechnology

Document #: FMCD2004

Rev: 1.0

Title: Curriculum Structure-Semester wise (2018-22 batch)

Page of

Year:

VII Semester

No.	Course Code	Course	Category	L-T-P	Credits	Contact Hours	ISA Marks	ESA Marks	Exam Duration
1	19EBTC401	Downstream Processing Technology	PSC	4-0-0	4	4	50	50	03 Hours
2	15EBTC402	Bioprocess Equipment Design	PSC	3-0-0	3	3	50	50	03 Hours
3	XXEBTE4XX	Program Elective - 03	PE	3-0-0	3	3	50	50	03 Hours
4	XXEBTE4XX	Program Elective - 04	PE	3-0-0	3	3	50	50	03 Hours
5	XXEBTE4XX	Program Elective - 05	PE	3-0-0	3	3	50	50	03 Hours
6	15EHSA401	Humanities – 02 (CIPE & EVS)	HSA	<i>Audit</i>					
7	20EBTW401	Senior Design Project	PRJ	0-0-6	6	18	50	50	03 Hours
8	15EBTP401	Downstream Processing Technology Lab	PSC	0-0-1	1	2	80	20	03 Hours
		Total		16-0-7	23	36			
9	17EBTE490	Research Experience for Undergraduates (REU)	PE	0-0-6	6	18	50	50	03 Hours
		Total		0-0-6	6	18			

For VII Sem		Program Electives	
Vertical I (BPE)		Vertical-II (MBT)	
20EBTE401	Industrial Biotechnology	15EBTE403	Plant and Animal Biotechnology
15EBTE402	Food Processing Technology	15EBTE404	Biopharmaceuticals
18EBTE404	Environmental Biotechnology	15EBTE405	Genomics and Proteomics
18EBTE403	Quality Assurance and regulations	20EBTE403	Bioethics, safety and IPR
		21EBTE401	Vaccine Technology

B. Suresh
HEAD

Theory = 06 [5+ 1 CIPE & EVS (Audit)] Lab = 01 Project work = 01

DEPT. OF BIOTECHNOLOGY
K.L.E. TECHNOLOGICAL,
UNIVERSITY, HUBBALLI-31.



FORM
ISO 9001: 2015- KLETECH
 Department of Biotechnology

Document #: FMCD2004

Rev: 1.0

Title: Curriculum Structure-Semester wise (2018-22 batch)

Page of

Year:

VIII Semester

No.	Course Code	Course	Category	L-T-P	Credits	Contact Hours	ISA Marks	ESA Marks	Exam Duration
1	XXEBTE4XX	Program Elective -06	PE	3-0-0	3	3	50	50	03 Hours
2	19EBTO401	Open Elective	OE	3-0-0	3	3	50	50	03 Hours
3	20EBTW402	Capstone Project	PRJ	0-0-11	11	33	50	50	03 Hours
Total				6-0-11	17	39			
4	18EBTI493	Internship-Training		0-0-6	6		50	50	03 Hours
5	20EBTW494	Internship-Project	PRJ	0-0-11	11	33	50	50	03 Hours
Total				0-0-17	17				


For VIII Sem		Program Electives	
Vertical I (BPE)		Vertical-II (MBT)	
18EBTE402	Biological Data Analysis	20EBTE402	Bio-business and entrepreneurship
21EBTE402	Genomic data analysis		


Sl. No.	Course Code	Open Elective
1	19EBTO401	Industrial waste management

Theory = 02 Capstone Project =01

ISA: In Semester Assessment, ESA: End Semester Assessment, L: Lecture, T: Tutorials, P: Practical, PSC: Program Core, PRJ: Project work, PE: Program Elective

Date:


HEAD
 Program Head
DEPT. OF BIOTECHNOLOGY
K.L.E. TECHNOLOGICAL,
UNIVERSITY, HUBBALLI-31.

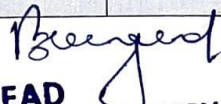
	FORM ISO 9001: 2015- KLETECH Department of Biotechnology	Document #: FMCD2004	Rev: 1.0
	Title: Curriculum Structure-Semester wise (2019-23 batch)		

KLE Technological University
II Year to IV Year Bachelor of Engineering Biotechnology
Curriculum Structure-2019-23

III Semester

No.	Course Code	Course	Category	L-T-P	Credits	Contact Hours	ISA Marks	ESA Marks	Exam Duration
1	20EMAB205	Numerical Methods and Differential Equations	BS	4-0-0	4	4	50	50	03 Hours
2	15EBTC201	Microbiology	PSC	4-0-0	4	4	50	50	03 Hours
3	15EBTC202	Biochemistry	PSC	4-0-0	4	4	50	50	03 Hours
4	15EBTF201	Bioprocess Calculations	ES	4-0-0	4	4	50	50	03 Hours
5	17EBTF201	Unit Operations-I	ES	3-0-0	3	3	50	50	03 Hours
6	15EBTP201	Microbiology Lab	PSC	0-0-1	1	2	80	20	03 Hours
7	15EBTP202	Biochemistry Lab	PSC	0-0-1	1	2	80	20	03 Hours
8	17EBTP201	Unit Operations-I Lab	ES	0-0-1	1	2	80	20	03 Hours
Total				19-0-3	22	25			

Theory = 05
 Lab = 03


HEAD
DEPT. OF BIOTECHNOLOGY
K.L.E. TECHNOLOGICAL,
UNIVERSITY, HUBBALLI-31.



FORM
ISO 9001: 2015- KLETECH
Department of Biotechnology

Document #: FMCD2004

Rev: 1.0

Title: Curriculum Structure-Semester wise (2019-23 batch)

Page of

Year:

IV Semester

S. No.	Course Code	Course	Category	L-T-P	Credits	Contact Hours	ISA Marks	ESA Marks	Exam Duration
1	20EMAB210	Biostatistics	BS	3-1-0	4	5	50	50	03 Hours
2	15EBTC203	Immunology	PSC	3-0-0	3	3	50	50	03 Hours
3	17EBTC201	Enzyme Technology	PSC	4-0-0	4	4	50	50	03 Hours
4	15EBTC205	Cell & Molecular Biology	PSC	4-0-0	4	4	50	50	03 Hours
5	17EBTF202	Unit Operations-II	ES	3-0-0	3	3	50	50	03 Hours
6	15EBTP204	Enzyme Technology Lab	PSC	0-0-1	1	2	80	20	03 Hours
7	15EBTP205	Cell & Molecular Biology Lab	PSC	0-0-1	1	2	80	20	03 Hours
8	17EBTP202	Unit Operations-II Lab	PSC	0-0-1	1	2	80	20	03 Hours
			Total	17-1-3	21	25			

Theory = 05
Lab = 03

Bergeed
HEAD
DEPT. OF BIOTECHNOLOGY
K.L.E. TECHNOLOGICAL,
UNIVERSITY, HUBBALLI-31.



FORM
ISO 9001: 2015- KLETECH
Department of Biotechnology

Document #: FMCD2004

Rev: 1.0

Title: Curriculum Structure-Semester wise (2019-23 batch)

Page of

Year:

V Semester

S. No.	Course Code	Course	Category	L-T-P	Credits	Contact Hours	ISA Marks	ESA Marks	Exam Duration
1	15EBTC301	Genetic Engineering & Applications	PSC	4-0-0	4	4	50	50	03 Hours
2	20EBTC301	Bioinformatics	PSC	4-0-0	4	4	50	50	03 Hours
3	15EBTC303	Reaction Engineering	PSC	4-0-0	4	4	50	50	03 Hours
4	15EBTC304	Biological Thermodynamics	PSC	3-0-0	3	3	50	50	03 Hours
5	15EBTC305	Research Methodology	PSC	3-0-0	3	3	50	50	03 Hours
6	15EBTW301	Mini Project	PRJ	0-0-3	3	9	50	50	03 Hours
7	15EBTP301	Genetic Engineering & Immunotechnology Lab	PSC	0-0-1	1	2	80	20	03 Hours
8	15EBTP302	Bioinformatics Lab	PSC	0-0-1	1	2	80	20	03 Hours
			Total	18-0-5	23	31			

Theory = 05
Lab = 02
Mini Project = 01

Beegard
HEAD
DEPT. OF BIOTECHNOLOGY
K.L.E. TECHNOLOGICAL,
UNIVERSITY, HUBBALLI-31.



FORM
ISO 9001: 2015- KLETECH
 Department of Biotechnology

Document #: FMCD2004

Rev: 1.0

Title: Curriculum Structure-Semester wise (2019-23 batch)

Page of

Year:

VI Semester

No.	Course Code	Course	Category	L-T-P	Credits	Contact Hours	ISA Marks	ESA Marks	Exam Duration
1	15EBTC306	Bioprocess Engineering	PSC	4-0-0	4	4	50	50	03 Hours
2	19EBTC302	Bioprocess Control & Automation	PSC	4-0-0	4	4	50	50	03 Hours
3	XXEBTE3XX	Program Elective - 01	PE	3-0-0	3	3	50	50	03 Hours
4	XXEBTE3XX	Program Elective - 02	PE	3-0-0	3	3	50	50	03 Hours
5	16EHSC301	Humanities – 01 (PALR)	HSC	3-0-0	3	3	50	50	03 Hours
6	15EBTW302	Minor Project	PRJ	0-0-6	6	18	50	50	03 Hours
7	15EBTP303	Bioprocess Engineering Lab	PSC	0-0-1.5	1.5	3	80	20	03 Hours
8	19EBTP301	Bioprocess Control & Reaction Engineering Lab	PSC	0-0-1.5	1.5	3	80	20	03 Hours
Total				17-0-9	26	41			

For VI Sem		Program Electives	
Vertical I (BPE)		Vertical-II (MBT)	
18EBTE301	Bioprocess Plant Design and economics	15EBTE302	Insilico Modeling and Drug Design
18EBTE401	Bioprocess Modeling and simulation	19EBTE301	Bioanalytical Techniques

Theory = 05 Lab = 02 Minor Project = 01

Bengaluru
HEAD
DEPT. OF BIOTECHNOLOGY
K.L.E. TECHNOLOGICAL,
UNIVERSITY, HUBBALLI-31.



FORM
ISO 9001: 2015- KLETECH
 Department of Biotechnology

Document #: FMCD2004

Rev: 1.0

Title: Curriculum Structure-Semester wise (2019-23 batch)

Page of

Year:

VII Semester

No.	Course Code	Course	Category	L-T-P	Credits	Contact Hours	ISA Marks	ESA Marks	Exam Duration
1	19EBTC401	Downstream Processing Technology	PSC	4-0-0	4	4	50	50	03 Hours
2	15EBTC402	Bioprocess Equipment Design	PSC	3-0-0	3	3	50	50	03 Hours
3	XXEBTE4XX	Program Elective - 03	PE	3-0-0	3	3	50	50	03 Hours
4	XXEBTE4XX	Program Elective - 04	PE	3-0-0	3	3	50	50	03 Hours
5	XXEBTE4XX	Program Elective - 05	PE	3-0-0	3	3	50	50	03 Hours
6	15EHSA401	Humanities – 02 (CIPE & EVS)	HSA	<i>Audit</i>					
7	20EBTW401	Senior Design Project	PRJ	0-0-6	6	18	50	50	03 Hours
8	15EBTP401	Downstream Processing Technology Lab	PSC	0-0-1	1	2	80	20	03 Hours
		Total		16-0-7	23	36			
9	17EBTE490	Research Experience for Undergraduates (REU)	PE	0-0-6	6	18	50	50	03 Hours
		Total		0-0-6	6	18			

For VII Sem		Program Electives	
Vertical I (BPE)		Vertical-II (MBT)	
20EBTE401	Industrial Biotechnology	15EBTE403	Plant and Animal Biotechnology
15EBTE402	Food Processing Technology	15EBTE404	Biopharmaceuticals
18EBTE404	Environmental Biotechnology	15EBTE405	Genomics and Proteomics
18EBTE403	Quality Assurance and regulations	20EBTE403	Bioethics, safety and IPR
		21EBTE401	Vaccine Technology

Handwritten signature

Theory = 06 [5+ 1 CIPE & EVS (Audit)] Lab = 01 Project work = 01

HEAD
DEPT. OF BIOTECHNOLOGY
K.L.E. TECHNOLOGICAL
UNIVERSITY, HUBBALLI-31.



FORM
ISO 9001: 2015- KLETECH
 Department of Biotechnology

Document #: FMCD2004

Rev: 1.0

Title: Curriculum Structure-Semester wise (2019-23 batch)

Page of

Year:

VIII Semester

No.	Course Code	Course	Category	L-T-P	Credits	Contact Hours	ISA Marks	ESA Marks	Exam Duration
1	XXEBTE4XX	Program Elective -06	PE	3-0-0	3	3	50	50	03 Hours
2	19EBTO401	Open Elective	OE	3-0-0	3	3	50	50	03 Hours
3	20EBTW402	Capstone Project	PRJ	0-0-11	11	33	50	50	03 Hours
Total				6-0-11	17	39			
4	18EBTI493	Internship-Training	--	0-0-6	6	--	50	50	03 Hours
5	20EBTW494	Internship-Project	PRJ	0-0-11	11	33	50	50	03 Hours
Total				0-0-17	17				

For VIII Sem		Program Electives	
Vertical I (BPE)		Vertical-II (MBT)	
18EBTE402	Biological Data Analysis	20EBTE402	Bio-business and entrepreneurship
21EBTE402	Genomic data analysis		

Sl. No.	Course Code	Open Elective
1	19EBTO401	Industrial waste management

Theory = 02 Capstone Project =01

ISA: In Semester Assessment, ESA: End Semester Assessment, L: Lecture, T: Tutorials, P: Practical, PSC: Program Specific Core, PRJ: Project work, PE: Program Elective

Date:

[Signature]
 Program Head
HEAD

DEPT. OF BIOTECHNOLOGY
K.L.E. TECHNOLOGICAL,
UNIVERSITY, HUBBALLI-31.