

SRI KRISHNA ARTS AND SCIENCE COLLEGE

An Autonomous College, Affiliated to Bharathiar University
Coimbatore – 641 008, Tamil Nadu, India.

LEARNING OUTCOMES BASED CURRICULUM FRAMEWORK (LOCF)

B.Sc. BIOTECHNOLOGY (V to VI Semester)

for 2021 - 22 admitted students

DEPARTMENT OF BIOSCIENCES



SRI KRISHNA ARTS AND SCIENCE COLLEGE
COIMBATORE – 641008

DEPARTMENT OF BIOTECHNOLOGY

(2021 - 2022)

I. PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)	
PEO 1	Graduates will be equipped with skills and knowledge and get employment in Bio industries, Pharma Industry, Government departments by imparting the requisite technical skills.
PEO 2	Graduates building their capabilities to work as a team member and able to become entrepreneurs, leaders in industry with ethical responsibility.
PEO 3	Graduates will be motivated to pursue their higher studies and research in leading universities globally

II. PROGRAMME LEARNING OUTCOMES (PLOS)	
No	STATEMENT
PLO1	Knowledge: An ability to apply knowledge with facts and figures related to various subjects in pure sciences such as Cell biology, Biochemistry, Microbiology, Molecular biology, Bioinstrumentation, Biostatistics, etc. (Cognitive)
PLO2	Critical Thinking: To enable students to propose novel ideas in explaining facts and figures or providing new solution to the problems. (Cognitive)
PLO3	Practical Skills: An ability to acquire skills in handling scientific instruments, planning and performing in laboratory experiments to meet desired needs within realistic constraints such as economic, environmental, social, ethical, health and safety, manufacturability, and sustainability in Biotechnology. (Psychomotor Skills)
PLO4	Teamwork Skills: An ability to work as a member of multidisciplinary teams and understand team members. (Affective)
PLO5	Communication Skills: Students will communicate scientific concepts, experimental results and analytical arguments clearly and concisely, both verbally and in writing. (Affective)
PLO6	Digital Skills: Serve as the Programmers, with sound knowledge of practical and theoretical concepts for developing molecular imaging. (Affective)
PLO7	Numeracy Skills: An ability to conduct experiments, as well as to analyze data with numeracy and statistical skills, understood the basic concepts, fundamental principles, and the scientific theories related to various scientific phenomena and their relevancies in the day-to-day life. (Cognitive)
PLO8	Leadership Skills: Ability to lead oneself and others in the achievement of organizational goals, contributing effectively to a team environment. (Affective)
PLO9	Life-Long Learning: Interdisciplinary approach helps in providing better solutions and new ideas for the sustainable developments, recognition of the need for, and an ability to engage in life-long learning. (Affective)
PLO10	Entrepreneur Skills: Ability to develop different functional aspects of business world and convert the opportunities in establishing the Bio-business. (Affective)
PLO11	Ethics and Professionalism: Apply ethical Principles and Commit to professional ethics, responsibilities and norms of the biological sciences practice. (Affective)

III. PROGRAMME LEARNING OUTCOMES VS GRADUATE ATTRIBUTES VS TAXONOMY OF VERBS

PLO	Graduate Attributes											Blooms		
	Knowledge	Critical Thinking	Practical Skills	Teamwork Skills	Communication skills	Digital skills	Numeracy Skills	Leadership skills	Lifelong Learning	Entrepreneurial Skills	Ethics & Professionalism	Cognitive	Psychomotor	Affective
1	✓											✓		
2		✓										✓		
3			✓										✓	
4				✓		✓								✓
5					✓	✓								✓
6						✓								✓
7							✓					✓		
8								✓			✓			✓
9									✓		✓			✓
10										✓	✓			✓
11											✓			✓

IV. PROGRAMME LEARNING OUTCOMES VS PROGRAMME EDUCATIONAL OBJECTIVES

PLO	PEO 1	PEO 2	PEO 3
PLO 1	✓		
PLO 2	✓		
PLO 3	✓		
PLO 4		✓	
PLO 5			✓
PLO 6			✓
PLO 7			✓
PLO 8		✓	
PLO 9			✓
PLO 10		✓	
PLO 11		✓	

V. ADDITIONAL PROGRAMME OUTCOMES (APOs)

APO 1	The students will have an ability in the social intelligence with (Social Intelligent Quotient and Emotional Quotient)
APO 2	The students will be trained in virtual collaborative ability to enhance learning retention and motivation and encourage knowledge sharing and support.
APO 3	They will have critical thinking and innovative skills to stay competitive in their future

	careers and excel beyond the content knowledge
APO 4	They will be provided with good digital foot print in the area of commerce and accounting in embarking lifelong learning techniques.

VI. PROGRAMME SPECIFIC OUTCOMES

PSO 1	Apply knowledge to find innovative solution for Biotechnological problems
PSO 2	Explore problems related to Biotechnology and provide valid solutions through industry – academic interface
PSO 3	Infer the potential and impact from Biotechnological innovations for finding sustainable solutions for issues pertaining to health and public health including pandemic, environment, waste management and agriculture
PSO 4	Graduates will have a scope of employment in (a) Food, Pharmaceutical, Bioprocessing, Bioinformatics (b) Allied industries as an analyst and manager in R and D and quality control Laboratories. (c) As an entrepreneur.

VII. Curriculum Structure for B.Sc. Biotechnology

Course Components, Credits & Marks Distribution

Part No	Group	Basic Structure: Distribution of Courses	Number of Courses	Total Marks	Total Credits
I - II	1	AEC – Ability Enhancement Courses	10	1000	31
III	2	DSC – Discipline Specific Courses	16	1350	50
	3	DSE – Discipline Specific Electives	10	1000	39
	4	GEC – General Elective Courses	7	650	20
IV	5	ANCC I & II – Audit Non-Credit Courses	2	Completed	-
V		ANCC III – Audit Non-Credit Courses	1	Completed	-
-	6	DTC – Drive Through Courses (SWAYAM - NPTEL, Coursera, Any courses certified by statutory bodies, etc)	Any number	-	Addl. Credits
Total				4000	140

Group 1. Ability Enhancement Courses (AECs) (10 Courses)

AEC are the courses based upon the content that leads to knowledge enhancement. Ability Enhancement Courses (AEC) are the following.

S. No.	Course Code	Course Title	Semester	Ownership Department	Contact Hours	Credits	Marks
1	21AEC02 21AEC07 21AEC11 21AEC17	Tamil I: Tamil Aruvi – I Hindi I French I Malayalam I	I	Language Dept	6	3	100

2	21AEC22	English I – English for Professional Communication	I	English Dept	6	3	100
3	21AEC04 21AEC08 21AEC12 21AEC18	Tamil II: Tamil Aruvi – II Hindi II French II Malayalam II	II	Language Dept	6	3	100
4	21AEC24	English II – Campus to Corporate	II	English Dept	6	3	100
5	21AEC35	Academic Skills for Bioscience	II	Bioscience	3	3	100
6	21AEC05 21AEC09 21AEC13 21AEC19	Tamil III: Tamil Kadal III Hindi III French III Malayalam III	III	Language Dept	6	3	100
7	21AEC25	English III – English through Literature	III	English Dept	6	3	100
8	21AEC06 21AEC10 21AEC14 21AEC20	Tamil III: Tamil Kadal IV Hindi IV French IV Malayalam IV	IV	Language Dept	6	3	100
9	21AEC26	English IV – Anthology of Literature	IV	English Dept	6	3	100
10	21AEC50	Capstone Project	IV	Bioscience	--	4	100
Total						31	1000

Group 2. Discipline Specific Courses (DSCs) (16 Courses)

These courses are to be studied compulsorily by the students as a core requirement. The students are required to take DSCs across six semesters. The courses designed under this category aim to cover the basics that a student is expected to imbibe in the particular discipline.

S. No.	Course Code	Course Title	Semester	Contact Hours	Credits	Marks
1	21BDC01	Cell Biology	1	4	3	100
2	21BDC02 / 21RDC02	Biochemistry	1	4	3	100
3	21BDC03	Lab in Cell Biology and Biochemistry	1	5	3	50
4	21BDC04	Microbiology	2	3	3	100
5	21BDC05	Genetics	2	3	3	100
6	21BDC06	Lab in Microbiology and Genetics	2	4	3	50
7	21BDC07	Molecular Biology	3	3	3	100
8	21BDC08 / 21RDC08	Immunology	3	3	3	100
9	21BDC09	Lab in Molecular Biology and Immunology	3	4	3	50
10	21BDC10 / 21RDC10	rDNA Technology	4	3	3	100
11	21BDC11	Bioprocess Technology	4	3	3	100
12	21BDC12	Lab in rDNA and Bioprocess technology	4	3	3	50
13	21BDC13	Applied Chemistry	4	3	3	100
14	21BDC14 / 21RDC14	Ayush	5	4	4	100

15	21BDC15 / 21RDC15	Bionanotechnology	5	4	4	100
16	21BDC16	Pharmaceutical Technology	6	5	3	50
Total					50	1350

Group 3. Discipline Specific Elective (DSEs) (10 Courses)

Discipline Specific Elective courses offered under the main discipline of study which may be specialized or advanced or supportive to the discipline of study. Students can choose any TEN courses from the following list.

S. No.	Course Code	Course Title	Ownership Department	Contact Hours	Credits	Marks
1	21BDE01 / 21RDE01	Biophysics and Bioinstrumentation	Microbiology	5	3	100
2	21BDE02A/ 21RDE02A	Biostatistics and Research Methodology – Theory	Mathematics	3	2	50
	21BDE02B/ 21RDE02B	Biostatistics and Research Methodology – Lab	Mathematics	2	2	50
3	21BDE03A/ 21RDE03A	Programming in ANSI C	Computer Science	3	2	50
	21BDE03B/ 21RDE03B	Lab in Programming in ANSI C	Computer Science	2	2	50
4	21BDE04/ 21RDE04	Human Physiology and Anatomy	Biotechnology	4	4	100
5	21BDE05	Environmental Biotechnology	Biotechnology	4	4	100
6	21BDE06	Medical Biotechnology	Biotechnology	4	4	100
7	21BDE07/ 21RDE07	Tumour Biology	Biotechnology	4	4	100
8	21BDE08	Lab in Environmental and Medical Biotechnology	Biotechnology	4	4	50
9	21BDE09/ 21RDE09	Enzymology	Microbiology	4	4	100
10	21BDE10	Biotechnology in Forensics	Microbiology	4	4	100
11	21BDE11	Plant and Agricultural Biotechnology	Biotechnology	5	3	100
12	21BDE12	Animal Biotechnology	Biotechnology	5	3	100
13	21BDE13	Lab in Plant and Animal Biotechnology	Biotechnology	5	3	50
14	21BDE14	Virology	Biotechnology	5	3	100
15	21BDE15/ 21RDE15	Project work	Biotechnology	5	3	100
16	21BDE16/ 21RDE16	Industrial Exposure Training	Biotechnology	4 weeks	4	100
Total (Any 10 Courses)						1000

Industrial Exposure Training (IET):

Students can opt for Industrial Exposure Training during fifth semester for a period of 4 weeks; in such case one DSE course will be exempted.

The Continuous Internal Assessment mark distribution for IET is as follows:

Component	Mode of Conduct	Project Coverage	Marks	Conversion
3 Reviews	Presentation	Phase by Phase	60	30
Work Diary	Written	Phase by Phase	10	5
Time Sheet	Online	Online Portal	10	5
Attendance	Based on rubrics			10
Total				50

Viva-voce Marks for the Industrial Exposure Training will be given based on the report and viva-voce examination conducted by the Department.

Report – 35 Marks

Viva - voce – 15 Marks

Project Work:

During the Sixth semester each student should undertake a project work and submit the report. A guide will be allotted to each student by the Department. Student can select any research topic in discussion with the guide. Project report will be evaluated jointly by the internal and external examiners for 35 Marks and Viva-voce examination shall be conducted jointly for 15 Marks.

Three Reviews should be conducted and marks have to be entered in Myclassroom as follows:

Review	-	25 marks
Report	-	15 marks
Work Dairy	-	10 marks

Total	-	50 marks

End Semester Viva-Voce will be conducted for 50 (External) Marks.
(Dissertation - 35 Marks & Viva-voce - 15 Marks)

Group 4. Generic Elective Courses (GECs) (7 Courses)

Generic Elective Courses are advanced level course for the discipline. They are not specialization specific. No overlapping with specialization courses. A student of specific discipline of any specialization can subscribe. These courses are future and recent developments in the respective discipline. The student has to subscribe any 7 courses in the following list:

Sl. No.	Course Code	Course Title	Semester	Ownership Depart.	Contact Hours	Credits	Marks
1	21BGE01/ 21RGE01	GEC 1 – Bioentrepreneurship	4	Microbiology	3	3	100

	21BGE02/ 21RGE02	Bioethics, Biosafety and IPR		Biotechnology			
2	21BGE03	GEC 2 – Marine Biotechnology	4	Biotechnology	3	3	100
	21BGE04	Therapeutic Biotechnology		Biotechnology			
3	21BGE05/ 21RGE05	GEC 3 – Bioinformatics	5	Bioinformatics	3	3	100
	21BGE06/ 21RGE06	Bio compost Technology and Bioinoculant		Microbiology			
4	21BGE07/ 21RGE07	GEC 4 – Quality Control in Bioindustries	5	Microbiology	3	3	100
	21BGE08	Molecular Diagnosis		Biotechnology			
5	21BGE09	GEC 5 – Hydroponics Technology	6	Biotechnology	5	2	50
	21BGE10	Pharmacology and Toxicological Science		Biotechnology			
6	21GEC01	Spoken Tamil	4	General	3	3	100
	21GEC02	Spoken Hindi					
	21GEC03	Spoken Telugu					
	21GEC04	Spoken Malayalam					
	21GEC05	Spoken French					
7	21GEC06	Environmental Science	3	Biotechnology	3	3	100
	21GEC08	English for Research Writing		English			
Total						20	650

Group 5. Audit Non-Credit Courses (ANCC)

Audit Non-Credit Courses are intended for students who want to gain general knowledge, learn a new skill, upgrade existing skills, enrich their understanding of a wide range of topics, or develop personal interests. A student has to complete any two courses during Semester I and II.

Part IV - Semester I - ANCC 1 & Semester II - ANCC 2	
S. No.	Course Name
1.	Human Rights
2.	Women's Rights
3.	Yoga for Human Excellence
4.	Indian Culture and Heritage
5.	Introduction to Cyber Security
6.	Consumer Protection
7.	Constitution of India
8.	Waste Management

Student has to take part in any one extension activity during their course of study.

Part V ANCC 3 - Extension Activities	
S. No.	Course Name
1.	National Service Scheme
2.	National Cadet Corps
3.	Youth Red Cross
4.	Red Ribbon Club
5.	Rotaract Club
6.	Sports
7.	Association Activities
8.	Club Activities

Group 6. Drive-Through Course (DTC)

These courses are intended to bring out and promote the self-learning initiative of the students – where their own motivation is what drives them to complete the course and not external compulsions. This fosters the habit of keeping oneself updated always by means of self-study. It gives the students the opportunities to explore new areas of interest and earn additional credits. Students can take any number of courses under this cafeteria system. The credits will not be taken for CGPA calculation. Additional 4 credits per Course will be given on submission of certificate.

1. SWAYAM-NPTEL
2. Coursera
3. Any courses certified by statutory bodies

VIII. Semester-wise Scheme

Semester I								
Course Code	Course Title	T/P/E	ESE Dur. Hrs	Ins. Hrs/ Week	CIA Marks	ES Marks	Total Marks	Credits
21AEC02 21AEC07 21AEC17 21AEC11	AEC-1 Language I Tamil – I: Tamil ,Aruvi I Hindi - I/ Malayalam - I/ French – I	T	3	6	50	50	100	3
21AEC22	AEC-2: English I: English for Professional Communication	T	3	6	50	50	100	3
21BDC01	DSC-1: Cell Biology	T	3	4	50	50	100	3
21BDC02/ 21RDC02	DSC-2: Biochemistry	T	3	4	50	50	100	3
21BDC03	DSC-3: Lab in Cell Biology and Biochemistry	P	-	5	-	-	-	-
21BDE01/ 21RDE01	DSE-1: Biophysics and Bioinstrumentation	T	3	5	50	50	100	3
21ANC01 21ANC02 21ANC03 21ANC04 21ANC05 21ANC06 21ANC07 21ANC08	ANCC-1 (NF2F) Human Rights Women's Rights Yoga for Human Excellence Indian Culture and Heritage Introduction to Cyber Security Consumer Protection Constitution of India Waste Management*	T	2	-	Completed			-
Total				30			500	15
Semester II								
Course Code	Course Title	T/P/E	ESE Dur. Hrs	Ins. Hrs/ Week	CIA Marks	ES Marks	Total Marks	Credits

21AEC04 21AEC08 21AEC18 21AEC12	AEC-3 Language II Tamil – II: Tamil Aruvi II Hindi - II/ Malayalam - II/ French – II	T	3	6	50	50	100	3
21AEC24	AEC-4 English II: Campus to Corporate	T	3	6	50	50	100	3
21AEC35	AEC-5 Academic Skills for Bioscience	T	3	3	50	50	100	3
21BDC04	DSC-4: Microbiology	T	3	3	50	50	100	3
21BDC05	DSC-5: Genetics	T	3	3	50	50	100	3
21BDC06	DSC-6: Lab in Microbiology and Genetics	P	3	4	25	25	50	3
21BDE02A / 21RDE02A	DSE-2A: Biostatistics and Research Methodology - Theory	E	3	3	25	25	50	2
21BDE02B / 21RDE02B	DSE-2B: Biostatistics and Research Methodology – Lab		2	2	25	25	50	2
21ANC01 21ANC02 21ANC03 21ANC04 21ANC05 21ANC06 21ANC07 21ANC08	ANCC-2 (NF2F) Human Rights* Women's Rights Yoga for Human Excellence Indian Culture and Heritage Introduction to Cyber Security Consumer Protection Constitution of India Waste Management	T	2	-	Completed			-
21BDC03	DSC-3: Lab in Cell Biology and Biochemistry	P	3	-	25	25	50	3
Total				30			700	25

Semester III								
Course Code	Course Title	T/P/E	ESE Dur. Hrs	Ins. Hrs/ Week	CIA Marks	ES Marks	Total Marks	Credits
21AEC05 21AEC09 21AEC19 21AEC13	AEC - 7 Language III Tamil – III: Tamil Kadal III Hindi - III/ Malayalam - III/ French – III	T	3	6	50	50	100	3
21AEC25	AEC - 8 English III : English through Literature	T	3	6	50	50	100	3
21BDC07	DSC-7: Molecular Biology	T	3	3	50	50	100	3
21BDC08/ 21RDC08	DSC-8: Immunology	T	3	3	50	50	100	3
21BDC09	DSC-9: Lab in Molecular Biology and Immunology	P	3	4	25	25	50	3
21BDE03A/ 21RDE03A	DSE-3A: Programming in ANSI C	E	3	3	25	25	50	2

21BDE03B/ 21RDE03B	DSE-3B: Practical: Programming in ANSI C	E	2	2	25	25	50	2
21GEC06	GEC-7: Environmental Science	T	3	3	50	50	100	3
21GEC08	English for Research Writing							
Total				30			650	22
	Semester IV							
Course Code	Course Title	T/P/E	ESE Dur. Hrs	Ins. Hrs/ Week	CIA Marks	ES Marks	Total Marks	Credits
21AEC06 21AEC10 21AEC20 21AEC14	AEC-9 Language IV Tamil – IV: Tamil Kadal IV Hindi - IV/ Malayalam - IV/ French – IV	T	3	5	50	50	100	3
21AEC26	AEC- 10 English IV: Anthology of Literature	T	3	4	50	50	100	3
21AEC50	AEC – 6 Capstone Project	-	3	-	50	50	100	4
21BDC10/ 21RDC10	DSC-10: rDNA Technology	T	3	3	50	50	100	3
21BDC11	DSC-11: Bioprocess Technology	T	3	3	50	50	100	3
21BDC12	DSC-12: Lab in rDNA and Bioprocess technology	P	3	3	25	25	50	3
21BDC13	DSC-13: Applied Chemistry	T	3	3	50	50	100	3
21BGE01/ 21RGE01 21BGE02/ 21RGE02	GEC-1: Bioentrepreneurship Bioethics, Biosafety and IPR	T	3	3	50	50	100	3
21BGE03 21BGE04	GEC-2: Marine Biotechnology Therapeutic Biotechnology	T	3	3	50	50	100	3
21GEC01 21GEC02 21GEC03 21GEC04 21GEC05	GEC-6: Spoken Tamil Spoken Hindi Spoken Telugu Spoken Malayalam Spoken French	T	3	3	50	50	100	3
Total				30			950	31
	Semester V							

Course Code	Course Title	T/P/ E	ESE Dur. Hrs	Ins. Hrs/ Week	CIA Marks	ES Marks	Total Marks	Credits
21BDE16/ 21RDE16	DSE-16 Industrial Exposure Training	-	3	4 Weeks	50	50	100	4
OR								
21BDE04/ 21RDE04	DSE-4: Human Physiology and Anatomy	T	3	4	50	50	100	4
AND								
21BDC14/ 21RDC14	DSC-14: Ayush	T	3	4	50	50	100	4
21BDC15/ 21RDC15	DSC-15: Bionanotechnology	T	3	4	50	50	100	4
21BDE05	DSE-5: Environmental Biotechnology	T	3	4	50	50	100	4
21BDE06	DSE-6: Medical Biotechnology	T	3	4	50	50	100	4
21BDE08	DSE-8: Lab in Environmental and Medical Biotechnology	P	5	4	25	25	50	4
21BGE05/ 21RGE05 21BGE06/ 21RGE06	GEC-3: Bioinformatics Bio compost Technology and Bioinoculant.	T	3	3	50	50	100	3
21BGE07/ 21RGE07 21BGE08	GEC-4: Quality Control in Bioindustries Molecular Diagnosis	T	3	3	50	50	100	3
Total				30			750	30
Semester VI								
Course Code	Course Title	T/P/ E	ESE Dur. Hrs	Ins. Hrs/ Week	CIA Marks	ES Marks	Total Marks	Credits
21BDC16	DSC - 16: Pharmaceutical Technology	T	3	5	25	25	50	3
21BDE11	DSE-11: Plant and Agricultural Biotechnology	T	3	5	50	50	100	3
21BDE12	DSE-12: Animal Biotechnology	T	3	5	50	50	100	3
21BDE13	DSE-13: Lab in Plant and Animal Biotechnology	P	5	5	25	25	50	3
21BGE09 21BGE10	GEC-5: Hydroponics Technology Pharmacology and Toxicological Science	T	3	5	25	25	50	2
21BDE15/ 21RDE15	DSE-15: Project Work	P	3	5	50	50	100	3
21ANC09 21ANC10 21ANC11 21ANC12 21ANC13 21ANC14 21ANC15 21ANC16	ANCC – 3 National Service Scheme National Cadet Corps Youth Red Cross Red Ribbon Club Rotaract Club Sports Association Activities Club Activities	-	-	-	Completed			-
Total				30			450	17

Total		4000	140
Drive-Through Course (DTC): Courses offered in SWAYAM-NPTEL, Coursera or Any courses certified by statutory bodies.		Additional 4 credits per Course will be given on submission of Certificate	
		During Semester I to Semester VI	

Semester-wise Distribution of Marks and Credits:

Semester	Total Marks	Total Credits
I	500	15
II	700	25
III	650	22
IV	950	31
V	750	30
VI	450	17
Total	4000	140

OFFERED BY**List of Courses Offered by Mathematics Department**

Sem	Course Code	Course Name	Programme	T/ P/ E	Ins. hrs	CIA	ES	Total Marks	Credit
II	21BDE02A/ 21RDE02A	Biostatistics and Research Methodology – Theory	B. Sc BT / MB	E	3	20	30	50	4
	21BDE02B/ 21RDE02B	Biostatistics and Research Methodology – Lab	B. Sc BT / MB		2	25	25	50	

List of Courses Offered by Computer Technology Department

Sem	Course Code	Course Name	Programme	T/ P/E	Ins. hrs	CIA	ES	Total Marks	Credit
III	21BDE03A/ 21RDE03A	DSE - 3A: Programming in ANSI C	B. Sc BT / MB	E	3	20	30	50	4
	21BDE03B/ 21RDE03B	DSE - 3B: Lab in Programming in ANSI C	B. Sc BT / MB		2	25	25	50	

OFFERED TO**List of Courses Offered to B.Sc (Microbiology)**

Sem	Course Code	Course Name	Programme	T/ P/E	Ins. hrs	CIA	ES	Total Marks	Credit
IV	21RDE07/ 21BDE07	Tumour Biology	B.Sc. (MB)	T	4	50	50	100	4
IV	21RGE02/ 21BGE02	Bioethics, Biosafety and IPR	B.Sc. (MB)	T	3	50	50	100	3

V	21BDE14	Virology	B.Sc. (MB)	T	5	50	50	100	3
V	21RGE08	Vaccine Technology	B.Sc. (MB)	T	3	50	50	100	3
VI	21RGE09	Single Cell Protein Technology	B.Sc. (MB)	T	6	50	50	100	5

List of Courses Offered to B. Sc (Catering Science)

Sem	Course Code	Course Name	Programme	T/ P/E	Ins. hrs	CIA	ES	Total Marks	Credit
III	21AEC52	Environmental Science and Food Waste Management	B.Sc. (CSHM)	T	3	50	50	100	3
IV	21BGE11	Nutrition and Dietetics	B.Sc. (CSHM)	T	5	50	50	100	3

List of Courses Offered to B. Sc (Microbiology/ Psychology and Mathematics)

Sem	Course Code	Course Name	Programme	T/ P/E	Ins. hrs	CIA	ES	Total Marks	Credit
III	21GEC06	Environmental Science	B.Sc. (MB/ Psy/ Maths)	T	3	50	50	100	3

List of Courses Offered to All UG (Except Microbiology/ Psychology and Mathematics/ CSHM)

Sem	Course Code	Course Name	Programme	T/ P/E	Ins. hrs	CIA	ES	Total Marks	Credit
III & IV	21AEC51	Environmental Studies	All UG (Except Microbiology/ Psychology and Mathematics/ CSHM)	T	3	50	50	100	3