KONGUNADU ARTS AND SCIENCE COLLEGE

(AUTONOMOUS)

COIMBATORE – 641 029

DEPARTMENT OF BIOTECHNOLOGY (UG)

CURRICULUM AND SCHEME OF EXAMINATIONS (CBCS)

(2021 - 2022 and onwards)

KONGUNADU ARTS AND SCIENCE COLLEGE (AUTONOMOUS)

COIMBATORE – 641 029

Programme Name: BSc., Biotechnology

Curriculum and Scheme of Examination under CBCS

(Applicable to the students admitted during the Academic Year 2021-2022)

Semester	Part	Subject Code	Title of the Paper	Instruction hours/cycle	Exam. Marks			Duration of Exam (hours)	Credits
					CIA	ESE	TOTAL		
I	I	21TML101	Language I@	6	25	75	100	3	3
	II	21ENG101	English –I	6	25	75	100	3	3
	III	21UBT101	Core Paper 1 – Cell Biology and Genetics	5	25	75	100	3	4
	III		Core Practical 1 – Lab in Cell biology, Genetics and Microbiology	5	-	-	-	-	-
	III	21UCH1A1	Allied Paper 1 – Chemistry	4	20	55	75	3	4
	III		Allied Practical 1- Chemistry	2	-	-	-	-	-
	IV	21EVS101	Environmental Studies **	2	-	50	50	3	2
		Total		**30**	**-**	**-**	**425**	**-**	**16**
II	I	21TML202	Language II@	6	25	75	100	3	3
	II	21ENG202	English –II	6	25	75	100	3	3
	III	21UBT202	Core Paper 2 –Bioinstrumentation	4	25	75	100	3	4
	III	21UBT203	Core Paper 3 – Microbiology	4	25	75	100	3	4
	III	21UBT2CL	Core Practical 1 - Lab in Cell biology, Genetics and Microbiology	2	40	60	100	6	4
	III	21UCH2A2	Allied Paper 2 – Chemistry	4	20	55	75	3	4
	III	21UCH2AL	Allied Practical 1 – Chemistry	2	20	30	50		2
	IV	21VED201	Value Education- Moral and Ethics**	2	-	50	50	3	2
		Total		**30**	**-**	**-**	**675**	**-**	**26**
III	I	21 TML303	Language III@	6	25	75	100	3	3
	II	21 ENG303	English –III	6	25	75	100	3	3
	III	21 UBT304	Core Paper 4 – Enzymology and Metabolism	3	25	75	100	3	4
	III	21 UBT305	Core Paper 5 – Molecular Biology	3	25	75	100	3	3

Sem	Part	Course Code	Title	Hours	CIA	ESE	Total	Exam Hrs	Credits
	III		Core Practical 2 - Lab in Enzymology, Molecular Biology and rDNA Technology	3	-	-	-	-	-
	III	21UBT3A3	Allied Paper 3 – Fundamentals of Mathematics	5	20	55	75	3	4
	III	21UBT3S1	Skill Based subject 1- Plant Tissue Culture and Hydroponics	2	25	75	100	2	3
	IV	21TBT301/21TAT301/21UHR3N1	Basic Tamil* / Advanced Tamil**/ Non-major elective- I**	2	-	75	75	3	2
			Total	**30**	**-**	**-**	**650**	**-**	**22**
IV	I	21TML404	Language IV@	6	25	75	100	3	3
	II	21ENG404	English –IV	6	25	75	100	3	3
	III	21UBT406	Core Paper 6 – rDNA Technology	4	25	75	100	3	4
	III	21UBT4CM	Core Practical 2 - Lab in Enzymology, Molecular Biology and rDNA Technology	4	40	60	100	6	3
	III	21UBT4A4	Allied Paper 4 – Bio Statistics	4	20	55	75	3	4
		21UBT4AL	Allied Practical 2- Bio Statistics Practical	2	20	30	50	3	2
	III	21UBT4S2	Skill Based subject 2- Herbal Technology	2	25	75	100	3	3
	IV	21TBT402/ 21TAT402/ 21UHR4N2	Basic Tamil* / Advanced Tamil**/ Non-major elective- II**	2	-	75	75	3	2
			Total	**30**	**-**	**-**	**700**	**-**	**24**
V	III	21UBT507	Core Paper 7 – Immunology	5	25	75	100	3	4
	III	21UBT508	Core Paper 8 – Plant and Animal Biotechnology	5	25	75	100	3	4
	III	21UBT509	Core Paper 9 – Genomics and Proteomics	5	25	75	100	3	4
	III	21UBT5CN	Core Practical 3 – Lab in Immunology, Plant and Animal Biotechnology	6	40	60	100	6	3
	III	21UBT5E1	Major Elective 1	4	25	75	100	3	5
	IV	21UBT5X1	EDC Paper	2	25	75	100	3	3
	III		Case Study analysis, Report and Viva Voce***	$3^{\#}$	-	-	-	-	-
	-	21UBT5IT	Internship Training ****	Grade					
			Total	**30**	**-**	**-**	**600**	**-**	**23**
VI	III	21 UBT610	Core Paper 10 – Bioprocess Technology	5	25	75	100	3	3

Part	Course Code	Title		CIA	ESE	Total		Credits
III	21 UBT611	Core Paper 11 – Biopharmaceuticals	5	25	75	100	3	3
III	21 UBT612	Core Paper 12 - Bioinformatics	5	100	-	100	3	4
III	21U BT6E2	Major Elective 2	5	25	75	100	3	5
III	21UBT6CO	Core Practical 4 - Lab in Bioprocess Technology & Biopharmaceuticals	6	40	60	100	6	3
III	21UBT6Z1	Case Study analysis, Report and viva***	2#	20	80	100	-	5
IV	21UBT6S3	Skill Based Subject 3 - Bio Business and Project Management	2	25	75	100	3	3
-	-	SWAYAM-MOOC	-	-	-	-	-	2
Total			**30**	**-**	**-**	**700**	**-**	**28**
V	21NCC/NSS /YRC/PYE/ ECC/RRC/ WEC101#	Extension Activities*	-	50	-	50	-	1
Grand Total			**-**	**-**	**-**	**3800**	**-**	**140**

Note :

CBCS   – Choice Based Credit system   CIA   – Continuous Internal Assessment

ESE   – End of Semester Examinations

@ Hindi/Malayalam/ French/ Sanskrit – 21HIN/MLM/FRN/SAN101 - 404

* - No End-of-Semester Examinations. Only Continuous Internal Assessment (CIA)

**- No Continuous Internal Assessment (CIA). Only End-of-Semester Examinations (ESE)

*** Case study:Report-60 marks, Viva voce-20marks; Internal-20marks

**** The students shall undergo an Internship training /field work for a minimum period of 2 weeks at the end of the fourth semester during summer vacation and submit the report in the fifth semester. The report will be evaluated for 100 marks along with the internal viva voce by the respective faculty. According to their marks, the grades will be awarded as given below.

	Grade
85 – 100	O
70 – 84	D
60 – 69	A
50 – 59	B
40 – 49	C
< 40	U (Reappear)

Not to be included in faculty workload

Major Elective Papers (2 papers are to be chosen from the following 6 papers)

1. Stem cell and Neuroscience

2. Nanotechnology

3. IPR, Biosafety and Bioethics

4. Research Methodology

5. Molecular Diagnostics

6. Food and Dairy Technology

Non-Major Elective Papers

1. Human Rights

2. Women's Rights

3. Consumer Affairs

Skill Based Subjects

1. Plant Tissue Culture and Hydroponics

2. Herbal Technology

3. Bio Business and Project Management

EDC paper - 21UBT5X1 –EDC – Bioentrepreneurship

 # List of Extension Activities:

1. National Cadet Corps (NCC)

2. National Service Scheme (NSS)

3. Youth Red Cross (YRC)

4. Physical Education (PYE)

5. Eco Club (ECC)

6. Red Ribbon Club (RRC)

7. Women Empowerment Cell (WEC)

Job Oriented Courses (JOC)

1. Clinical Research and Medical Coding   (21UBT0J1)
2. Agro Industrial biotechnology   (21UBT0J2)

Note: JOC which are offered at present will be applicable for the students admitted during the academic year 2021-2022 and will be considered as extra credit courses.

Tally Table:

S.No.	Part	Subject	Marks	Credits
1.	I	Language – Tamil/Hindi/Malayalam/ French/ Sanskrit	400	12
2.	II	English	400	12
3.	III	Core – Theory/Practical	1600	58
	-	SWAYAM-MOOC	-	2
	III	Allied	400	20
		Electives/Project	300	15
4.	IV	Basic Tamil / Advanced Tamil (OR) Non-major electives	150	4
		Skill Based subject	300	9
		EDC	100	3
		Environmental Studies	50	2
		Value Education	50	2
5.	V	Extension Activities	50	1
		Total	**3800**	**140**

- 25 % CIA is applicable to all subjects except JOC, COP and SWAYAM courses which are considered as extra credit courses

3. The students should complete a **SWAYAM-MOOC** before the completion of the 5th semester and the course completed certificate should be submitted through the HOD to the Controller of Examinations. Two credits will be given to the candidates who have successfully completed. In case the students have completed more than one online course, the appropriate 2 extra credits shall be awarded to such candidates upon the submission of certificate through the HOD to the Controller of Examinations.

- A **Field Training/ onsite training** preferably relevant to the course should be undertaken every year based on the norms prescribed by the institution and the discretionary power of the HoD, Dean and Principal

Components of Continuous Internal Assessment

Components		Marks	Total
Theory			
CIA I	75	(75+75 = 150/10)	
CIA II	75	15	25
Assignment/Seminar*		5	
Attendance		5	
Practical			
CIA Practical		25	
Observation Notebook		10	40
Attendance		5	
Case study			
Review		15	20
Regularity		5	

* In courses where group discussions /activities/case studies are given. This may be considered in place of assignments.

Components of 100 % Continuous Internal Assessment

Components		Marks	Total Mark
Theory			
CIA I	55	(55+55 = 110/2)	
CIA II	55	55	55
Assignment/Seminar*		5	10
Attendance		5	
Practical			
CIA Practical Breakup of Marks Protocol - 15 Result & viva - 15		30	35
Record Notebook		5	
	TOTAL		**100**

BLOOM'S TAXONOMY BASED ASSESSMENT PATTERN

K1-Remember; **K2**-Understanding; **K3**-Apply; **K4**-Analyze; **K5**-Evaluate

1. **Theory Examination - Part I, II& III**

    (i)   CIA I & II and ESE:75 Marks

Knowledge Level	Section	Marks	Description	Total
K1 – K2 Q1 to 10	A (Answer all)	10 x 1 = 10	MCQ	75
K2 – K5 Q11 to 15	B (Either or pattern)	5 x 5 = 25	Short Answers	
K2 – K5 Q16 to 20	C (Either or pattern)	5 x 8 = 40	Descriptive / Detailed	

    (ii)   CIA I & II and ESE: 55 Marks

Knowledge Level	Section	Marks	Description	Total
K1 – K2 Q1 to 10	A (Answer all)	10 x 1 = 10	MCQ	55
K2 – K5 Q11 to 15	B (Either or pattern)	5 x 3 = 15	Short Answers	
K2 – K5 Q16 to 20	C (Either or pattern)	5 x 6 = 30	Descriptive / Detailed	

2. **Practical Examination:**

Knowledge Level	Section	Marks	Total
K3 ↕ K5	Experiments	50	60
	Record Work	10	