

Department of Biotechnology

CURRICULUM & CREDIT FRAMEWORK AND FORMATIVE ASSESSMENT FOR BACHELOR OF BIOTECHNOLOGY 4 YEAR PROGRAM

Scheme of Examinations under National Education Policy 2020

Bachelor of Science in Biotechnology

B.Sc. Biotech 1st Semester					
S.no	Courses	Course Title	Course Code	Remarks	Credits
1	Major 1	Basics of Biomolecules	24CBTS401DS01	Compulsory	4
2	Major 2	Cell Biology	24CBTS401DS02	Compulsory	4
3	Minor	Basics concepts of Chemistry	24CHE401MI01	Students must select one minor subject	4
		Fundamentals of Plant Ecology	24BOT401MI01		4
		Human Evolution	24ZOO401MI01		4
4	MDC	Basic Statistics	24STAX01MD01	Students must select one MDC subject	3
		Introductory Mathematics	24MATX01MD01		3
		Basic Studies in Hindustani Instrumental Music	24MUSIX01MD01		3
5	SEC	Laboratory Techniques I	24CBT401SE01	Compulsory	3
6	AEC	English 1	23ENGX01AE01	Compulsory	2
7	VAC	Environmental Science	23EVSX01VA01	Compulsory	2

Scheme of Distribution of Marks

S.no	Course Title	Course Code	Theory Marks		Practical Marks		Total Marks	Exam Time	Credit Distribution		
			Int	Ext.	Int	Ext.			L	T	P
1	Basics of Biomolecules	24CBTS401DS01	30	70	-	-	100	3hrs	4	0	0
2	Cell Biology	24CBTS401DS02	30	70	-	-	100	3hrs	4	0	0
3	Basics concepts of Chemistry	24CHE401MI01	15	35	50		100	3hrs	2	0	2
	Fundamentals of Plant Ecology	24BOT401MI01	15	35	15	35	100	3hrs	2	0	2
	Human Evolution	24ZOO401MI01	15	35	15	35	100	3hrs	2	-	2
4	Basic Statistics	24STAX01MD01	-	-	-	-	75	-	2	0	1
	Introductory Mathematics	24MATX01MD01	-	-	-	-	75	-	2	1	0
	Basic Studies in Hindustani Instrumental Music	24MUSIX01MD01	-	-	-	-	75	-	2	0	1
5	Laboratory Techniques I	24CBT401SE01	-	-	-	-	75	-	0	0	3
6	English 1	23ENGX01AE01	-	-	-	-	50	-	2	0	0
7	Environmental Science	23EVSX01VA01	-	-	-	-	50	-	2	-	-

L: Lecture; T: Tutorial; P: Practical

Scheme of Distribution of Formative Assessment

Formative Assessment for two credits theory (VAC)

	Marks distribution
Written test (2 X 10)	20
Class assignments / Case study / Mini project (2 X 5)	10
Quiz / seminar / Group discussion / Debate / QM profile (2 X 7.5)	15
Attendance	05
Total	50

Formative Assessment for three credits theory (MDC)

	Marks distribution
Written test (2 X 10)	20
Class assignments / Case study / Mini project (2 X 10)	20
Book review / Essay / Seminar (1 X 10)	10
Quiz / Group discussion / Debate (2 X 10)	20
Attendance	05
Total	75

Formative Assessment for Skill Enhancement Course-Three Credits Practical

	Marks distribution
Regular assessment through observation and class discussion	10
Lab work (practical file)/ field work (report)/portfolio	30
Assignment/Case study/mini project (2X10)	20
Seminar/Presentation	10
Attendance	05
Total	75

FORMATIVE ASSESSMENT EVALUATION PROCESS FOR AEC

	Marks distribution
Written test (2 X 5)	10
Peer discussion / Debate / Extempore speech (2X 10)	20
Role play	05
Essay / Article / Report writing	10
Attendance	05
Total	50

Formative Assessment Criteria for two credits practical (Communication)

	Marks distribution
Regular assessment through observation and class discussion 20	20
Field work (Report)/Mini project 15	15
Assignment (2 X 5) 10	10
Attendance 05	05
Total	50

B.Sc. Biotech 2 nd Semester					
S.no	Courses	Course Title	Course Code	Remarks	Credits
1	Major 1	Basics of Microbiology	24CBTS402DS01	Compulsory	4
2	Major 2	Basics of Biotechnology	24CBTS402DS02	Compulsory	4
3	Minor	Chemistry of Metals & non-Metals, hydrocarbons & Solutions	24CHE402MI01	Students must select one minor subject	4
		Basics of Plant genetics	24BOT402MI01		4
		DNA fingerprinting	24ZOO402MI01		4
4	MDC	Statistics in everyday life	24STAX02MD01	Students must select one MDC subject	3
		Mathematical Reasoning	24MATX02MD01		3
		Applied Theory of Hindustani Music Vocal	24MUSVX02MD01		3
5	SEC	Laboratory Techniques II	24CBT402SE01	Compulsory	3
6	AEC	Hindi	23HNDX01AE01	Compulsory	2
7	VAC	Digital & Technological solutions	23CSAX01VA01	Compulsory	2

Scheme of Distribution of Marks

S.no	Course Title	Course Code	Theory Marks		Practical Marks		Total Marks	Exam Time	Credit Distribution		
			Int.	Ext.	Int.	Ext.			L	T	P
1	Basics of Microbiology	24CBTS402DS01	30	70	-	-	100	3hrs	4	0	0
2	Basics of Biotechnology	24CBTS402DS02	30	70	-	-	100	3hrs	4	0	0
3	Chemistry of Metals & non-Metals, hydrocarbons & Solutions	24CHE402MI01	15	35	50		100	3hrs	2	0	2
	Basics of Plant genetics	24BOT402MI01	15	35	15	35	100	3hrs	2	0	2
	DNA fingerprinting	24ZOO402MI01	15	35	15	35	100	3hrs	2	-	2
4	Statistics in everyday life	24STAX02MD01	-	-	-	-	75	-	2	0	1
	Mathematical Reasoning	24MATX02MD01	-	-	-	-	75	-	2	1	0
	Applied Theory of Hindustani Music Vocal	24MUSVX02MD01	-	-	-	-	75	-	2	0	1
5	Laboratory Techniques II	24CBT402SE01	-	-	-	-	75	-	0	0	3
6	Hindi Bhasha Sanvardhan 1	23HNDX01AE01	-	-	-	-	50	-	2	0	0
7	Digital & Technological solutions	23CSAX01VA01	-	-	-	-	50	-	2	-	-

L: Lecture; T: Tutorial; P: Practical

B.Sc. Biotech 3rd Semester

S.no	Courses	Course Title	Course Code	Remarks	Credits
1	Major 1	Fundamentals of Molecular Biology	25CBTS403DS01	Compulsory	4
2	Major 2	Fundamentals of Immunology	25CBTS403DS02	Compulsory	4
3	Minor	Molecular Structure, Thermodynamics, Equilibrium & Alkyl Halides	25CHE403MI01	Students must select one minor subject	4
		Basics of Plant Cell Biology	25BOT403MI01		4
		Introduction to Fisheries	25ZOO403MI01		4
4	MDC	Statistical Computing using SPSS	25STAX03MD01	Students must select one MDC subject	3
		Applicable Mathematics	25MATX03MD01		3
		Essentials of Music Vocal	25MUSVX03MD01		3
5	SEC	Laboratory Techniques III	25CBT403SE01	Compulsory	3
6	AEC	English 2	23ENGX02AE01	Compulsory	2
7	VAC	Wellbeing through Yoga	25YOGEEC01	Compulsory	2

Scheme of Distribution of Marks

S.no	Course Title	Course Code	Theory Marks		Practical Marks		Total Marks	Exam Time	Credit Distribution		
			Int.	Ext.	Int.	Ext.			L	T	P
1	Fundamentals of Molecular Biology	25CBTS403DS01	30	70	-	-	100	3hrs	4	0	0
2	Fundamentals of Immunology	25CBTS403DS02	30	70	-	-	100	3hrs	4	0	0
3	Molecular Structure, Thermodynamics, Equilibrium & Alkyl Halides	25CHE403MI01	15	35	50		100	3hrs	2	0	2
	Basics of Plant Cell Biology	25BOT403MI01	15	35	15	35	100	3hrs	2	0	2
	Introduction to Fisheries	25ZOO403MI01	15	35	15	35	100	3hrs	2	-	2
4	Statistical Computing using SPSS	25STAX03MD01	-	-	-	-	75	-	0	0	3
	Applicable Mathematics	25MATX03MD01	-	-	-	-	75	-	2	1	0
	Essentials of Music Vocal	25MUSVX03MD01	-	-	-	-	75	-	2	0	1
5	Laboratory Techniques III	25CBT403SE01	-	-	-	-	75	-	0	0	3
6	English 2	23ENGX02AE01	-	-	-	-	50	-	2	0	0
7	Wellbeing through Yoga	25YOGEEC01	-	-	-	-	50	-	2	-	-

L: Lecture; T: Tutorial; P: Practical

B.Sc. Biotech 4th Semester					
S.no	Courses	Course Title	Course Code	Remarks	Credits
1	Major 1	Metabolism	25CBTS404DS01	Compulsory	4
2	Major 2	Introduction to Bioinformatics	25CBTS404DS02	Compulsory	4
3	Major 3	Genetics	25CBTS404DS03	Compulsory	4
4	Major 4	Bioanalytical tools and Biostatistics	25CBTS404DS04	Compulsory	4
5	Minor	Chemistry of Pnictogens, Ionic Solids, Electrochemistry and Aryl Halides	26CHE404MV01	Students must select one minor subject	4
		Horticulture	25BOTS405MV01		4
		Animal Nutrition	25ZOO404MV01		4
6	AEC	Hindi Bhasha Sanvardhan 2	24HNDX03AE01	Compulsory	2
7	VAC	Communication Skills	23CLAEEC01	Compulsory	2

Scheme of Distribution of Marks

S.no	Course Title	Course Code	Theory Marks		Practical Marks		Total Marks	Exam Time	Credit Distribution		
			Int.	Ext.	Int.	Ext.			L	T	P
1	Metabolism	25CBTS404DS01	25	50	25		100	3hrs	3	0	1
2	Introduction to Bioinformatics	25CBTS404DS02	25	50	25		100	3hrs	3	0	1
3	Genetics	25CBTS404DS03	25	30	25		100	3hrs	3	0	1
4	Bioanalytical tools and Biostatistics	25CBTS404DS04	25	30	25		100	3hrs	3	0	1
5	Chemistry of Pnictogens, Ionic Solids, Electrochemistry and Aryl Halides	26CHE404MV01	15	35	50		100	3hrs	2	0	2
	Horticulture	25BOTS405MV01	15	35	50		100	3hrs	2	0	2
	Animal Nutrition	25ZOO404MV01	15	35	50		100	3hrs	2	0	2
6	Hindi Bhasha Sanvardhan 2	24HNDX03AE01	-	-	-		50	-	2	0	0
7	Communication Skills	23CLAEEC01	-	-	-		50	-	0	0	2

L: Lecture; T: Tutorial; P: Practical

B.Sc. Biotech 5th Semester					
S.no	Courses	Course Title	Course Code	Remarks	Credits
1	Major 1	Recombinant DNA Technology	26CBTS405DS01	Compulsory	4
2	Major 2	Plant & Animal Biotechnology	26CBTS405DS02	Compulsory	4
3	Major 3	Fundamentals of Enzymology	26CBTS405DS03	Compulsory	4
4	Major 4	Bioprocess Engineering	26CBTS405DS04	Compulsory	4
5	Minor	Transition Metals, Batteries, Alcohols & Phenols	26CHE405MI01	Students must select one minor subject	4
		Poultry Farming	26BOTS405MV01		4
		Agroforestry	26ZOO405MV01		4
6	Internship	-	-	Compulsory	4

Scheme of Distribution of Marks

S.no	Course Title	Course Code	Theory Marks		Practical Marks		Total Marks	Exam Time	Credit Distribution		
			Int.	Ext.	Int.	Ext.			L	T	P
1	Recombinant DNA Technology	25CBTS405DS01	25	50	25		100	3hrs	3	0	1
2	Plant & Animal Biotechnology	25CBTS405DS02	25	50	25		100	3hrs	3	0	1
3	Fundamentals of Enzymology	25CBTS405DS03	25	30	25		100	3hrs	3	0	1
4	Bioprocess Engineering	25CBTS405DS04	25	30	25		100	3hrs	3	0	1
5	Transition Metals, Batteries, Alcohols & Phenols	26CHE405MI01	15	35	50		100	3hrs	2	0	2
	Agroforestry	25BOTS405MV01	15	35	50		100	3hrs	2	0	2
	Poultry Farming	25ZOO405MV01	15	35	50		100	3hrs	2	0	2
6	Internship	-	-	-	-		100	120 hrs	-	-	4

L: Lecture; T: Tutorial; P: Practical

B.Sc. Biotech 6th Semester					
S.no	Courses	Course Title	Course Code	Remarks	Credits
1	Major 1	Microbial Technology	26CBTS406DS01	Compulsory	4
2	Major 2	Nano Biotechnology	26CBTS406DS02	Compulsory	4
3	Major 3	Genomics & Proteomics	26CBTS406DS03	Compulsory	4
4	Major 4	Medical Microbiology	26CBTS406DS04	Compulsory	4
5	Minor	Chemistry of Polymer, Kinetics, Carbonyl Compounds & Coordination Complexes	26CHE406MV01	Students must select one minor subject	4
		Plant resource utilization	26BOTS406MV01		4
		Introduction To Vermiculture	26ZOO406MV01		4
6	SEC	Laboratory techniques - IV	26CBT406SE01	Compulsory	2

Scheme of Distribution of Marks

S.no	Course Title	Course Code	Theory Marks		Practical Marks		Total Marks	Exam Time	Credit Distribution		
			Int.	Ext.	Int.	Ext.			L	T	P
1	Microbial Technology	26CBTS406DS01	25	50	25		100	3hrs	3	0	1
2	Nano Biotechnology	26CBTS406DS02	25	50	25		100	3hrs	3	0	1
3	Genomics & Proteomics	26CBTS406DS03	30	70	-		100	3hrs	3	0	1
4	Medical Microbiology	26CBTS406DS04	30	70	-		100	3hrs	3	0	1
5	Chemistry of Polymer, Kinetics, Carbonyl Compounds & Coordination Complexes	26CHES406MV01	15	35	50		100	3hrs	2	0	2
	Plant resource utilization	26BOT406MV01	15	35	50		100	3hrs	2	0	2
	Introduction To Vermiculture	26CBT406MV01	15	35	50		100	3hrs	2	0	2
6	Laboratory Techniques – IV	226CBT406SE01	-	-	-		50	-	2	0	0

L: Lecture; T: Tutorial; P: Practical