SISTER NIVEDITA UNIVERSITY

Undergraduate course structure for Biotechnology

As per NEP 2020 regulation and according to UGC-CBCS

Course structure for

B.Sc. in Biotechnology

And

B.Sc. Honours in Biotechnology / B.Sc. Honours with Research in Biotechnology

Category definition with credit breakup

Semester	Credits									Credits /Semester
	MC/ME	ME		Non-Major		MDC	AEC	SEC	VAC	INT	
		Course	Project	NM	NV						
I	10			2	1+1		2	3	2		21
II	10				1+1	3	2	3	2		22
III	10			4	1+1	3	2				21
IV	10			4	1+1	3	2				21
V	15				1+1			3	2		22
VI	15			4	1+1					3	24
VII	19			6							23
VIII		8/20	12/0								22
Credits/Course	109			32		9	8	9	6	3	
Total Credit											176

Major – Major Program Specific Course – Compulsory (MC); Major Program Specific Course – Elective (ME); NM – Non-Major Specific Subject Course; NV – Non-Major vocational education and training; MDC – Multidisciplinary courses; AEC – Ability Enhancement Courses; SEC – Skill Enhancement Courses; VAC – Value Added Courses; INT – Internship; Project – Project.

Category	Course name	Credit	Teaching Scheme		
			L	T	P
Semester I					
MC 1	Biochemistry	3	3	0	0
	Biochemistry Lab	2	0	0	4
MC 2	Basics of Microbiology	3	3	0	0
	Basics of Microbiology lab	2	0	0	4
NM 1	Fundamentals of Biotechnology	2	2	0	0
NV 1	Vocational - EAA I (Yoga/ Sports/ NCC/ NSS)	1	0	0	2
NV 2	Vocational – Soft Skill Development I	1	1	0	0
AEC 1	Communicative English I	2	2	0	0
VAC1	Environmental Science I	2	2	0	0
SEC1	Computer Application	3	2	0	2
Total Credit = 21			Teaching Hour = 27		
Semester II					
MC 3	Bioenergetics and Metabolism	3	3	0	0
	Bioenergetics and Metabolism Lab	2	0	0	4
MC 4	Cell Biology and Cell Signalling	3	3	0	0
	Cell Biology and Cell Signalling Lab	2	0	0	4
NV 3	Vocational - EAA II (Yoga/ Sports/ NCC/ NSS)	1	0	0	2
NV4	Vocational – Soft Skill Development II	1	1	0	0
MDC 1	Selected by the candidate (Elective)	3	3	0	0
AEC 2	Communicative English II	2	2	0	0
VAC 2	Environmental Science II	2	2	0	0
SEC 2	Selected by the candidate (Elective)	3	3	0	0
Total Credit = 22			Teaching Hour = 27		
Semester III					
MC 5	Fundamentals of Molecular Biology	3	3	0	0
	Fundamentals of Molecular Biology Lab	2	0	0	4
MC 6	Mammalian and Plant physiology	3	3	0	0
	Mammalian and Plant physiology Lab	2	0	0	4
NM 2	Minor I – Selected by the candidate	3	3	0	0
	Minor I – Lab Selected by the candidate	1	0	0	2
NV 5	Vocational - Mentored Seminar I	1	1	0	0
NV 6	Vocational – Soft Skill Development III	1	1	0	0
MDC2	Selected by the candidate (Elective)	3	3	0	0
AEC3	Logical Ability I / Foreign Language I	2	2	0	0
Total Credit = 21			Teaching Hour = 26		
Semester IV					
MC 7	Immunology	3	3	0	0
	Immunology Lab	2	0	0	4
MC 8	Inheritance Biology	3	3	0	0
	Inheritance Biology Lab	2	0	0	4
NM 3	Minor II – Selected by the candidate	3	3	0	0
	Minor II – Lab Selected by the candidate	1	0	0	2
NV 7	Vocational - Mentored Seminar II	1	1	0	0
NV8	Vocational – Soft Skill Development IV	1	1	0	0
MDC3	Selected by the candidate (Elective)	3	3	0	0
AEC4	Logical Ability II / Foreign Language II	2	2	0	0
Total Credit = 21			Teaching Hour = 26		

Category	Course name	Credit	Teaching Scheme		
			L	T	P
Semester V					
MC 9	Biophysical Chemistry and Instrumentation	3	3	0	0
	Biophysical Chemistry and Instrumentation Lab	2	0	0	4
MC 10	Recombinant DNA Technology	3	3	0	0
	Recombinant DNA Technology Lab	2	0	0	4
MC 11	Animal and Plant Biotechnology	3	3	0	0
	Animal and Plant Biotechnology Lab	2	0	0	4
NV 9	Vocational - Mentored Seminar III	1	1	0	0
NV10	Vocational – Soft Skill Development V	1	1	0	0
SEC 3	Selected by the candidate (Elective)	3	3	0	0
VAC 3	Ethics Study and IPR / elective	2	2	0	0
Total Credit = 22			Teaching Hour = 28		
Semester VI					
MC 12	Biostatistics and Bioinformatics	3	3	0	0
	Biostatistics and Bioinformatics Lab	2	0	0	4
MC 13	Disease and Disorders	3	3	0	0
	Disease and Disorders Lab	2	0	0	4
MC 14	Bioprocess Technology and Applications	3	3	0	0
	Bioprocess Technology and Applications Lab	2	0	0	4
NM4	Minor III – Selected by the candidate	3	3	0	0
	Minor III – Lab Selected by the candidate	1	0	0	2
NV 11	Vocational - Mentored Seminar IV	1	1	0	0
NV12	Vocational – Soft Skill Development VI	1	1	0	0
INT1	Internship	3	0	0	6
Total Credit = 24			Teaching Hour = 34		
Semester VII					
MC 15	Computational Biology and Data Science	3	3	0	0
	Computational Biology and Data Science Lab	2	0	0	4
MC 16	Ecology and Evolution	3	3	0	0
	Ecology and Evolution Project	2	0	0	4
MC 17	Pharmaceutical Science and Drug Delivery	3	3	0	0
	Pharmaceutical Science and Drug Delivery Lab	2	0	0	4
MC 18	Genomics, Proteomics and Metabolomics	2	2	0	0
MC 19	Molecular Nanomachines	2	2	0	0
NM 5	Minor IV – Selected by the candidate	3	3	0	0
	Minor IV – Lab Selected by the candidate	1	0	0	2
Total Credit = 23			Teaching Hour = 30		
Semester VIII					
MC 20	Developmental Biology	4	4	0	0
MC 21	Emerging Techniques and Trends in Biotechnology	2	2	0	0
MC 22	Biotechnology Epilogue	2	2	0	0
NM6	Microbial diversity and Metabolism	2	2	0	0
ME -Project / Courses	Project/ Research Design and Communication (Mandatory), [Pharmacovigilance, Bio-entrepreneurship, Molecular Diagnostics, Biosafety and Public health (Any 2)]	12/(4+4 +4)	0/12	0	24/0
Total Credit = 22			Teaching Hour = 22/34		