

VANITA VISHRAM WOMEN'S UNIVERSITY

SCHOOL OF SCIENCE AND TECHNOLOGY

DEPARTMENT OF BIOTECHNOLOGY



**VANITA VISHRAM
WOMEN'S UNIVERSITY**

SURAT

BACHELOR OF SCIENCE (B.Sc.) IN BIOTECHNOLOGY

For Undergraduate (UG) Education

**Syllabus applicable to the students seeking admission in the
following Program**

B.Sc. Biotechnology w.e.f. the Academic Year 2022-23

Credit Structure of the Programme

Semester	Subjects	Core Course	Component wise Credits	Total Credits
Semester 1	Biotechnology	Core Course-I (Credit-2) Core Course-II (Credit-2) Core Course Lab-1 (Credit=2)	6	24
	Microbiology	Core Course-I (Credit-2) Core Course-II (Credit-2) Core Course Lab-1 (Credit=2)	6	
	Chemistry/ Physics	Core Course-I (Credit-2) Core Course-II (Credit-2) Core Course Lab-1 (Credit=2)	6	
	AECC	AECC I (Credit-2) AECC-II (Credit-2)	4	
	Elective	GE-I (Credit-2) Elective (From Other Discipline)	2	
Semester 2	Biotechnology	Core Course-III (Credit-2) Core Course-Iv (Credit-2) Core Course Lab-2 (Credit=2)	6	24
	Microbiology	Core Course-III (Credit-2) Core Course-IV (Credit-2) Core Course Lab-2 (Credit=2)	6	
	Chemistry/ Physics	Core Course-III (Credit-2) Core Course-IV (Credit-2) Core Course Lab-2 (Credit=2)	6	
	AECC	AECC I (Credit-2) AECC-II (Credit-2)	4	
	Elective	GE-I (Credit-2) Elective (From Other Discipline)	2	
Semester 3	Biotechnology	Core Course-V (Credit-2) Core Course-VI (Credit-2) Core Course-VII (Credit-2) Core Course Lab-3 (Credit=3)	9	24
	Microbiology	Core Course-V (Credit-2) Core Course-VI (Credit-2) Core Course-VII (Credit-2) Core Course Lab-3 (Credit=3)	9	
	SEC	Skill Enhancement-1 Skill Enhancement-2	4	
	Department Elective	Department Elective-1 (Certificate Course (30 Hrs)*/ In House Or Outside Training (30 Hrs)/ Student Exchange Program)	2	

Semester 4	Biotechnology	Core Course-VIII (Credit-2) Core Course-IX (Credit-2) Core Course-X (Credit-2) Core Course Lab-4 (Credit=3)	9	24
	Microbiology	Core Course-VIII (Credit-2) Core Course-IX (Credit-2) Core Course-X (Credit-2) Core Course Lab-4 (Credit=3)	9	
	SEC	Skill Enhancement-3 (Credit-2) Skill Enhancement-4 (Credit-2)	4	
	Department Elective	Department Elective-2 (Certificate Course (30 Hrs)*/ In House Or Outside Training (30 Hrs)/ Student Exchange Program)	2	
Semester 5	Biotechnology	Core Course-XI (Credit-2) Core Course-XII (Credit-2) Core Course-XIII (Credit-2) Core Course-XIV (Credit-2) Core Course-XV (Credit-2) Core Course-XVI (Credit-2) Core Course Lab-V (Credit-6)	18	24
	Department Elective	Department Elective-3 (Credit-2) Department Elective-3 Practical (Credit-1) Selections would be made from the two subjects offered Department Elective-4 (Credit-2) Department Elective-4 Practical (Credit-1) Selections would be made from the two subjects offered	6	
Semester 6	Biotechnology	Core Course-XVII (Credit-2) Core Course-XVIII (Credit-2) Core Course-XIX (Credit-2) Core Course-XX (Credit-2) Core Course Lab-VI (Credit-4)	12	24
	Department Elective	Department Elective-5 (Credit-2) Department Elective-5 Practical (Credit-1) Selections would be made from the two subjects offered Department Elective-6 (Credit-2) Department Elective-6 Practical (Credit-1) Selections would be made from the two subjects offered	6	
	Project Work	Project Work/ Training (90 Hrs)/ Internship (2 Weeks)	6	
Semester 7	Biotechnology	Core Course-XXI (Credit-4)	6	22

		Core Course Lab-7 (Credit=2)		
	Research Specific Elective	Research Methodology (Credit-2) Research Area Specific Elective-I (Credit-2)	4	
	Research Component	Dissertation (Credit-9) Seminar (Credit-1) Research Article Writing (Credit-2)**	12	
Semester 8	Biotechnology	Core Course-XXII (Credit-4) Core Course Lab-8 (Credit=2)	06	22
	Research Specific Elective	Data Analysis Course (Credit-2) Research Area Specific Elective-II (Credit-2)	4	
	Research Component	Dissertation (Credit-9) Seminar (Credit-1) Research Paper Presentation in Seminar or Conference (Credit-2)	12	
Total				188

* Certificate Course May Be In Online/Offline Or In Blended Mode. Students can opt for courses offered by Swayam or other MOOC platforms.

**Research Article Writing Comprises Articles Submitted To The Supervisor.

Suggestive Notes for The Implementation Of Nep 2020:

- As Per Government Guidelines, Yet We Can Implement Ncc/Nss/ Saptdhara/ Physical Training As 2 Credit Component In Each Semester And Incorporate It In The Course Curriculum

Subject Combinations to be Offered for Academic Year 2022-23

- Biotechnology, Microbiology, (Chemistry or Physics)

Credit Structure of the Programme with Paper Titles

Subject Titles and Credits Structure FOR B.Sc. BIOTECHNOLOGY PROGRAMME FOR THE STUDENTS ENROLLED IN THE AY 2022-23						
Semester	Course Code	Course Category	Course Title	Offering Department	Total Credit	Semester Wise Total Credit
I	BT11290	CC	Introduction to Biotechnology (Theory)	Biotechnology	2	24
	BT11300	CC	Cell Biology (Theory)	Biotechnology	2	
	BT11310	CC	Biotechnology Practical-I	Biotechnology	2	
	MB11290	CC	Introduction to Microbiology (Theory)	Microbiology	2	
	MB11300	CC	Fundamentals of Microbial Techniques (Theory)	Microbiology	2	
	MB11310	CC	Microbiology Practical-I	Microbiology	2	
	CH11290	CC	Inorganic and Physical Chemistry-I (Theory)	Chemistry	2	
	CH11300	CC	Organic Chemistry-I (Theory)	Chemistry	2	
	CH11310	CC	Chemistry Practical-I	Chemistry	2	
	PH11040	CC	Biophysics & Instrumentation - I	Physics	2	
	PH11050	CC	Biophysics & Instrumentation - II	Physics	2	
	PH11060	CC	Practical-I	Physics	2	
	EN12010	AE	Communication Skills in English - I (Theory)	English	2	
	BT12010	AE	Environmental Studies - I (Theory)	Biotechnology	2	
	BT31090	GE	Biotechnology for Human Welfare	Biotechnology	2	
	CH31090	GE	Biochemistry-I	Chemistry		
	FN31020	GE	Food Safety and Hygiene (Theory)	Food & Nutrition		
PH32080	GE	Physics in Everyday Life-I (Theory)	Physics			
BO31010	GE	Microbes, Algae, Fungi and Archegonite (Theory)	Botany			
II	BT11320	CC	Biochemistry - I	Biotechnology	2	24
	BT11330	CC	Plant & Animal Physiology	Biotechnology	2	
	BT11340	CC	Biotechnology Practical - II	Biotechnology	2	
	MB11320	CC	Microbial Growth & Nutrition	Microbiology	2	
	MB11330	CC	Prokaryotic Cell Structure	Microbiology	2	
	MB11340	CC	Microbiology Practical - II	Microbiology	2	
	CH11320	CC	Inorganic and Physical Chemistry-II (Theory)	Chemistry	2	
	CH11330	CC	Organic Chemistry-II (Theory)	Chemistry	2	
	CH11340	CC	Chemistry Practical-II	Chemistry	2	
	PH11100	CC	Biophysics and Instrumentation III	Physics	2	
	PH11110	CC	Biophysics and Instrumentation IV	Physics	2	
	PH11120	CC	Physics Practical II	Physics	2	
	EN12020	AE	Communication Skills in English - II (Theory)	English	2	
	BT12020	AE	Environmental Studies - II (Theory)	Biotechnology	2	
BT31100	GE	Basics of Human Embryology	Biotechnology	2		

	CH31100	GE	Biochemistry-II	Chemistry		
	BO31020	GE	Botany for Human Welfare	Botany		
	FN	GE	Food Standards and Laws	Food & Nutrition		
	PH31100	GE	Physics in Everyday Life II (Theory)	Physics		
III	BT11350	CC	Biochemistry-II	Biotechnology	2	24
	BT11360	CC	Environmental Biotechnology	Biotechnology	2	
	BT11370	CC	Enzymology	Biotechnology	2	
	BT11380	CC	Biotechnology Practical III	Biotechnology	3	
	MB11350	CC	Microbial Taxonomy and Systematics	Microbiology	2	
	MB11360	CC	Microbial Control	Microbiology	2	
	MB11370	CC	Microbial Ecology	Microbiology	2	
	MB11380	CC	Microbiology Practical III	Microbiology	3	
	BT15030	SEC	Biomathematics and Biostatistics	Biotechnology	2	
	MB15060	SEC	Bioethics and Biosafety	Microbiology	2	
	BT14170	DSE	Inhouse training/workshop/outside training/online certificate course		2	
IV	BT11390	CC	General Genetics	Biotechnology	2	24
	BT11400	CC	Immunology-I	Biotechnology	2	
	BT11410	CC	Fermentation Technology	Biotechnology	2	
	BT11420	CC	Biotechnology Practical-IV	Biotechnology	3	
	MB11390	CC	Virology	Microbiology	2	
	MB11400	CC	Mycology, Phycology, Protozoology and Parasitology	Microbiology	2	
	MB11410	CC	Microbial Physiology	Microbiology	2	
	MB11420	CC	Microbiology Practical-IV	Microbiology	3	
	BT15040	SEC	Bioinformatics	Biotechnology	2	
	MB15100	SEC	Qualitative Analysis of Water	Microbiology	2	
	BT14180	DSE	Inhouse training/workshop/outside training/online certificate course		2	
V	BT11430	CC	Molecular Biology (Theory)	Biotechnology	2	24
	BT11440	CC	rDNA Technology (Theory)	Biotechnology	2	
	BT11450	CC	Immunology II (Theory)	Biotechnology	2	
	BT11460	CC	Animal Cell and Tissue Culture (Theory)	Biotechnology	2	
	BT11470	CC	Plant Cell and Tissue Culture (Theory)	Biotechnology	2	
	BT11480	CC	Industrial Microbiology (Theory)	Biotechnology	2	
	BT11490	CC	Biotechnology Practical - V (Practical)	Biotechnology	6	
	BT14190	DSE	Food Technology (Theory)	Biotechnology	2	
	BT14200	DSE	Food Technology (Practical)	Biotechnology	1	
	BT14210	DSE	Dairy Technology (Theory)	Biotechnology	2	
	BT14220	DSE	Dairy Technology (Practical)	Biotechnology	1	
	BT14230	DSE	Clinical Microbiology (Theory)	Biotechnology	2	
	BT14240	DSE	Clinical Microbiology (Practical)	Biotechnology	1	
	BT14250	DSE	Haematology & Blood Banking (Theory)	Biotechnology	2	
BT14260	DSE	Haematology & Blood Banking (Practical)	Biotechnology	1		