

Department of Biotechnology

Syllabus as per NEP-2020 (w.e.f. 2024-2025)

M.Sc. Biotechnology

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		Total		SEC	one)	Elective	Core	Core	Core	Core	Core			Total	SEC	Elective (Select any one)	Core	Core	Core		Core	Core			the Course	Components of		
a in Biotechnology (Total Credits = 48 + 4*)			Project	Laboratory Techniques-II	Al in Biotechnology/Advance Bioinformatics	Research Methodology or	Genetic Engineering and Its Applications	Immunology & Immunotechnology	Eukaryotic Molecular Biology and Genetics	Microbiology	Cell Biology	(Se	The second secon		Laboratory Techniques-I	Biology Biology	Biochemistry and Enzymology	Molecular Biology and Prokaryotes	Bioinformatics	Biotechnology	Tools and Techniques in	Biophysical Chemistry				Title		
= 48 + 4*	Total Credits	28	4	. 6		သ	ω	ω	ω	ω	ω	Second Semester	First Year	24	တ	C	ω	ω	ω		ω	ω				Credits	First Semester)	First Year
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	24+4 Internal Project = 52			ò	70	70	}	70	2	70	20 00	20	,		ò	70	70	70	70		70	70	ESE	Assessment	External	JATION		
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Exit-1 with PG Diploma in Biotechnology (Total Credits = 48 + 4*)

*For exit with one year PG Diploma in Biotechnology, 4 additional credits of Vocational Course/Internship/Apprenticeship/Project/Community Outreach/Workshop is mandatory and such students have to inform at least three months prior to exit-1.

and in addition 4 credits of Vocational Course/ Internship/ Apprenticeship/ Project/ Community Outreach/ Workshop (VIAPCW)*. With these credits a student may take re-entry in the PG Second Year. *Students having UG Hone With Research Degree are eligible for direct entry in the PG Second Year.

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		-	_	Elective (Select	-	Core	Core	Core	Core	(i) Cour		Total	SEC	(Selective any one)	!	Core	Core	Core	Core	Core	(Onl) Degr	(iii) Full \	(ii) Cours	of the Course	Omnono		Sering III II
			Laboratory Techniques-IV	Microbiome Blotechnology/Blology of Illiections Diseases	┼	Bioprocess Engineering & Downstream Processing	Biosafety, Bioethics and Intellectual Property Rights	Nano-biotechnology	Environmental Biotechnology	(i) Coursework or(ii) Six Month Research Project @ min. 30 hrs/ week	Second Year (Fourth Semester)		Laboratory Techniques-III	Plant Genetic Resources: - Conservation and Their Sustainable Use or Biotechnology of Human Welfare	entrepreneurship	Industrial Biotechnology & Bio	Animal Biotechnology	Plant Biotechnology	Genomics and Proteomics	Food Biotechnology	(Only students having UG Hons. with Research Degree can opt)	(iii) Full Year Research Project @ min. 30 hrs/ week	(ii) Coursework (all students can opt) or (ii) Coursework + Six Month Research Project (all	Title	(中華) 12 12 12 12 12 14 14 14 15 15 16 16 16 16 16 16 16 16 16 16 16 16 16	Seco	was its rill the Po Second Year. *Students having UG Hons. With Research Degree are eligib
Exit with PG Deg	Total C	24	6	C	N C			ω	ω	(i) 24 (ii) 24	(Fourth	24	တ	ω		ω	٥	ယ	ယ	ω	(iii) 48	(ii) 24 + 24	(i) 24 + 24	Credits	Third Semester	Second Year	earch Degr
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ree in Biotechnology (Total Credits	Total Credits After PG Second Year = 24 + 24 =	24 - 54 - 1	30	3	5	1 0	<u>,</u> 0	15	15				30	15		5	א כ	5	5	5				MSE		PO occur	le for direct entry in the pG second Year.
11	48		6	;	70	70	70	70	70	}			70	70		70	70	70	70	70				ESE			1 Year.
52 + 48 = 100)	<i></i>	700	100		100	100	100	100	100	(ii) 700		700	100	100	3	100	100	100	100	100	(iii) 1400	(11) /00 +/00	(i) 700 + 700	Total	Miles of the Control		

STRUCTURE OF THE PROGRAM

Department of Biotechnology Ch. Charan Singh University, Meerut

Syllabus as per NEP-2020 (w.e.f. 2024-2025)

M.Sc. Biotechnology

		First Year (First Semester)						
S.No.	Components of the Course							
1.	Core	Biophysical Chemistry	3	3				
2.	Core	Tools and Techniques in Biotechnology	3	3				
3.	Core	Bioinformatics	3	3				
4.	Core	Molecular Biology and Prokaryotes	3	3				
5.	Core	Biochemistry and Enzymology	3	3				
6.	Elective (Select any one)	Biostatistical Methods orStructural Biology	3	3				
7.	SEC	Laboratory Techniques-I	6	12				
		Total	24	30				
8.	Core	First Year (Second Semester) Cell Biology	3	3				
9.	Core	Microbiology	3	3				
10.	Core	Eukaryotic Molecular Biology and Genetics	3	3				
11.	Core	Immunology & Immunotechnology	3	3				
12.	Core	GeneticEngineering and Its Applications	3	3				
13.	Elective (Select any one)	(Select any Al in Biotechnology/Advance						
14.	SEĆ	Laboratory Techniques-II	6	12				
,		Project	4					
		Total	28	30				
	Exit with Po	G Diploma in Biotechnology (Total Credi	its = 48 + 4	=52				

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		Second Year (Third Semester)		
S.No.	Components of the Course	Credits	Credit hrs	
	(i) Coursewo	rk or	48	
	. ,	ork + Six Month Research Project or	24 + 24	
	7	r Research Project @ min. 30 hrs/	48	
	week	,		
15.	Core	Food Biotechnology	3	3
16.	Core	Genomics and Proteomics	3	3
17.	Core	Plant Biotechnology	3	3
18.	Core	Animal Biotechnology	3	3
19.	Core	Industrial Biotechnology & Bio	3	3
		entrepreneurship		
20.	Elective	Plant Genetic Resources: -	3	3
	(Select any	Conservation and Their Sustainable		
	one)	Use or Biotechnology of Human		
		Welfare	0	40
21.	SEC	Laboratory Techniques-III	6	12
	Total		24	30
		Second Year (Fouth Semester)		
	Coursework		24	-
	Six Month R	esearch Project @ min. 30 hrs/ week	24	
22.	Core	Environmental Biotechnology	3	3
23.	Core	Nano-biotechnology	. 3	3
24.	Core	Biosafety, Bioethics and Intellectual Property Rights	3	3
25.	Core	Bioprocess Engineering & Downstream Processing	3	3
26.	Core	Forensic Science	3	3
20. 27.	Elective	Microbiome Biotechnology/Biology of	3	3
21.	(Select any one)	Infectious Diseases		
28.	SEC	Laboratory Techniques-IV	6	12

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