CO-PO-PSO Mapping B, Sc (Hons) in Microbiology

							PO					F	so		
Course	COs	CO Description	1	2	3	4	5	6	Average	1	2	3	4	5	Average
Name		Co	re Cou	urses (S	Semest	er-I)									
\$ <u>-</u>	<b>CO1</b>	Explain historical development	0	3	0	0	0	0		3	0	0	0	0	
roduction d Microbia ty	CO1	Analyze the differences and relationships between diverse microbial groups	0	0	0	3	0	0	0.74	0	0	0	0	0	2.50
01: Int ogy an Diversi	соз	Use the basic instruments in Microbiology Lab	0	0	0	0	3	3	2.71	3	0	0	0	0	2100
1CBCC crobiol	CO4	Identify certain microscopic specimen	0	0	0	0	0	1		0	0	1	0	0	_
Mic	CO5	Design basic experiment for assessing asepticity	3	0	0	3	0	0		0	0	0	0	3	
	601	Recognize, identify and differentiate the internal and external structures of	3	0	0	2	0	0		3	0	0	0	0	
acteriology	<u> </u>	Describe the basic principles, components and optics of different microscopic techniques.	0	0	0	0	2	0	2.00	3	3	0	0	0	3.00
MCBCC 02: B	CO3	Explain the basic stages of microbial growth, reproduction and apply different methods to control them.	0	0	0	0	0	0	2.60	0	3	0	3	0	
50	CO4	Estimate microbial growth under lab conditions.	0	0	0	3	0	0		3	0	0	0	0	_
	CO5	Demosntrate culturing and staining bacteria from different sources and characterization.	0	0	0	3	O	) C		3	0	3	0	c	

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							РО					PS	0	r	
Name	COs	CO Description	1	2	3	4	5	6	Average	1	2	3	4	5	Average
		Cor	re Cou	rses (S	emest	er- II)									
Ę	CO1	Define buffer and its role to bioactive molecules	0	0	0	0	0	0		3	2	0	0	0	
3iochemis	CO2	Describe the salient characteristics of biomolecules	0	0	0	0	0	0	3.00	0	3	0	0	0	2.83
C 03: I	соз	Compare the level of structure of biomolecules	3	0	0	0	0	0		0	3	0	0	0	-
iMCBC	CO4	Demonstrate qualitative and quantitative estimation	0	3	0	3	0	0		0	3	0	0	0	-
n	C05	Construct models to study protein structures	0	0	0	0	3	3		0	0	0	0	3	
	C01	List general properties of viruses and categorize different viral groups	0	0	0	0	0	0		3	0	0	0	0	
Virology	<u> </u>	Explain salient features of viral nuleic acid and its replication strategies.	0	0	0	0	0	0	3.00	0	3	0	0	0	3.00
ICBCC 04:	CO3	Interpret general principles of viral disease transmission, control and vaccination.	3	0	0	0	0	0		0	0	0	3	C	)
NGN	CO4	Explain oncogenic nature of certain viruses.	0	3	0	0	0	c		0	0	0	3	(	<u>)</u>
	C05	Compare and contrast methods used for laboratory manipulation of viruses.	0	0	0	3	3	(	)	0	0	3	0		0

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Course							PO						PSO		
Name	COs	CO Description	1	2	3	4	5	6	Average	1	2	3	4	5	Average
		Core Cours	es (Sen	nester	-111)										
bial olism	C01	Define the patterns of microbial growth	0	0	0	0	0	0		0	2	0	0	0	
Micro Metab	CO2	Describe the effect of environment on microbial growth	0	0	3	0	0	0		0	3	0	0	0	
CC 05: / and 1	CO3	Explain the nutrient uptake mechanisms of microbes	0	0	0	2	0	0	2.67	0	0	0	0	0	2.80
5MCB( siology	CO4	Classify the microbes based on their mode of metabolisms	0	0	0	0	0	0		0	3	0	0	0	
D N H	CO5	Assess the metabolism procedures of microbes	0	0	0	0	3	0		0	0	3	0	3	
gy	C01	Illustrate the basic cellular structure	0	0	0	0	0	0		0	3	0	0	0	
II Biolo	CO2	Relate Central Dogmatic pathway with organelles	3	0	0	0	0	0		0	3	0	0	0	-
06: Ce	соз	Compile the possible outcomes of cellular signalling	0	3	0	3	0	0	3.00	0	0	0	0	0	3.00
MCBCC	CO4	Correlate the cell molecular pathway with cell cycle and cell death	3	0	0	0	0	0		0	3	0	3	0	-
n G	CO5	Assess the different stages of cell division	0	0	0	3	0	0		0	0	0	0	3	
	C01	Discuss the structures of nucleic acid	0	0	0	0	0	0	4	0	3	0	0	0	-
: 07: iology	CO2	Demonstrate the isolation of genomic DNA	0	0	0	0	3	3	-	0	0	0	0	0	
1CBCC ular B	CO3	Analyze transcription and post transcriptional event	0	0	0	3	0	0	3.00	0	0	3	0	0	3.00
UGN	CO4	Assess the content of DNA and RNA	0	0	0	0	0	3	-	0	0	0	0	3	-
Σ	CO5	Construct various models of DNA replication	0	0	0	0	3	0		0	0	0	0	3	

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					14 - 14 -		P	0				PSO			
Course	COs	CO Description	1	2	3	4	5	6	Average	1	2	3	4	5	Average
Name			Core (	Courses	(Seme	ester-l	√)								
		Define mutation and its effect on microbial													
-	CO1	genome	0	3	0	0	0	0		0	0	0	5	U	
obi		different													
Aicr.	600	Categorize and compare different	0	0	0	0	0	0		0	3	0	3	0	3 00
S: N	02	Demonstrate the use of transposons in gene							3.00					0	5.00
C O	CO3	evolution	0	0	3	0	0	0		0	0	0	- 0	0	
28.0		Explain the features of bacteriophage genetic						0		0	3	0	o	0	
Ň	CO4	system	0	0	0	0	0	0		- 0		-			
Š		Define plasmids and deduce their different		0	0	2	3	0		0	0	0	0	0	
	CO5	conformation	0	3	2	0	0	0		0	0	0	0	0	
Ital	CO1	Identify various microbial habitat	Ŭ	5											
ner										0	0	0	0	0	
onr SV	CO2	Compare different microbial interactions	0	3	3	0	0	0	-	0		0	0		2 00
olog		Demonstrate the function of microbes on		0	0	0	0	0	2.90	0	0	0	3	0	3.00
9: E	CO3	environment	3	0	0	0			1						
							2			0	0	0	0	3	
D Z	CO4	Assess the efficacy of waste management	0	3	3	3	5	0	-						
M		Develop programming for sustainable rural &	0	0	0	0	0	3		0	0	0	0	3	
Š	CO5	urban development	0	0											
>		Identify the different factors that affect the	3	0	0	0	0	0		3	0	0	0	0	
Dair	C01	microbial growth in toous.							-						
P		Explain the mechanisms of various food						0		3	0	0	0	0	
d ar ogy	CO2	spoilage by microorganisms	0	3	0	0	0		3.00				2	0	3.00
Diol	<b>CO</b> 2	Illustrate the methods of food preservation	0	0	3	0	3	0	5.00	0	0	0		0	
1:01	03	Inspect the food intoxications and food					1			0	0	0	3	0	
Ξ C	CO4	infections and their preventive measure	0	0	0	3	3		4			-			1
1CB		Assess the level of food sanitation, control													
29		measures and detection of foodborne	0	0	0	0	0	3	5	0	0	0	0	3	1
-	CO5	pathogens	0	0										Princ	ipal (
														Irish	la Mission

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5							PO					PS	0		
Course	COs	CO Description	1	2	3	4	5	6	Average	1	2	3	4	5	Average
Name			1			(Semes	ter-V)								
						(									
×		Summarize the history of industrial	3	0	0	0	0	0		3	0	0	0	0	
_	01	microbiology													
tria		Isolate industrially important microbial	0	o	0	3	3	3		0	0	0	0	3	
dus	02	Access the formentation parameters and													
11: Ind biolog		choose the best fermentation processes,	0	0	0	3	3	3	3.00	0	0	0	0	3	3.00
55	CO3	bio-reactors etc	- 0												
<u>z</u> <u>G</u>	604	Compare different down-stream	0	0	3	0	0	3		0	0	0	0	3	
25	04	Demonstrate enzyme immobilization													
		methods and microbial production of						_			2		0	3	
	CO5	certain industrial products	0	0	3	3	0	0		0	5	0	0		
>	C01	Recognize important contributions of	3	0	0	0	0	0		3	0	0	0	0	-
log	01	Describe the functions of different immune									_	0	0	0	
oun	CO2	cells in generation of immune response	0	0	0	0	0	0	-	0	3	0	0	0	-
ш Ц	602	Illustrate the characteristics of antigen,	0	3	0	0	0	0	3.00	0	3	0	0	0	3.00
12:	03	antibody and their interaction													
BCC	CO4	and their consequences	0	3	0	0	0	0		0	0	3	0	0	-
E E	0.04	Analyze the principle of some important													
ne l		immunological techniques on experimental				1				0	0	0	0	3	
	CO5	basis	0	0	0	3	3	3		0	0				J

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Course						PO							PSO		
Name	COs	CO Description	1	2	3	4	5	6	Average	1	2	3	4	5	Average
				Core	Course	s									
	CO1	List the normal microflora of human body	0	3	0	0	0	0		3	0	0	0	0	
Aedical gy	CO2	Explain sample collection and diagnosis processes of microbial diseases	0	0	3	0	0	0		0	0	2	0	0	
CC13: N obiolo	соз	Compare various bacterial, viral, fungal, protozoan diseases	3	3	0	0	0	0	3.00	0	0	0	3	0	2.86
Aicr CBC	CO4	Perform antibacterial sensitivity tests	0	0	0	3	3	3		0	0	3	0	3	
	CO5	Assess different antimicrobial agents based on their modes of action and developing resistance	0	0	3	0	3	0		0	0	3	0	3	
ANC	C01	List the main breakthroughs in the field of genetic engineering	3	0	0	0	0	0		3	0	0	0	0	
binant I V	CO2	Evaluate the different strategies and methods in molecular cloning	0	0	0	0	3	3		0	3	0	0	0	-
: Recom	CO3	Illustrate the idea about Genomic and cDNA libraries and apply the technologies in human welfare	0	3	0	3	0	0	3.00	0	3	0	0	0	3.00
CBCC14 Te	CO4	Analyze the outcome of DNA amplification and sequencing experiments	0	0	0	3	3	0		0	0	3	0	3	-
NGMC	C05	Validate the basic methods of cloning and formulate standardized protocol to produce recombinant DNA	0	0	0	0	0	3		0	0	0	3	3	

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Course								PO					PS	0	
Name	COs	CO Description	1	2	3	4	5	6	Average	1	2	3	4	5	Average
		Discipline Sr	ecific	Flec	tives										
2		List the basic principles of Mendelian inheritance at the													
olo	CO1	molecular and cellular levels.	3	0	0	0	0	0		0	2	0	0	0	
Bi															
nce		Explain the inheritance of linked genes, its physical basis					2			_	_	0	0	0	
rita	CO2	and construct genetic map from the recombination data.	0	3	0	0	2	0		0					2 50
he		Illustrate chromosomal structure and extra-chromosomal			~		2	0	2.75	0	0	0	0	0	2.50
<u>-</u>	CO3	inheritance	0	0	0	0	2			-	-				
E01		Determine relationship between organism-level patterns													
DS	604	of heredity ("classical" genetics) and molecule level		2	0	2	0	0		0	0	0	0	0	
JCB	04	Apply the principles of inheritance to solve problems		5		5	-			-	-				
5	CO5	regarding human heredity	0	3	0	0	0	3		0	0	0	0	3	
5	C01	Define the microbial biotechnology and list its scope	3	3	0	0	0	0		0	2	0	0	0	
3															
2		Utilize the microbial biotransformation procedures and											_		
ogy vird	CO2	apply the microbial product recovery process	0	0	3	0	3	3		0	0	0	3	- 0	
ē		Assess the role of microbes in bioremediation an bio-						0	3.00				2		2.80
Ę.	CO3	energy production	0	3	3	3	0	0			0	0	2	0	
iot i															
	CO4	Analyze and categorize the various application of RNAi	0	0	0	3	3	0		0	0	0	0	3	
5		Apply the intellectual property rights in scientific works													
	CO5	and communication.	0	0	0	0	3	0		0	0	3	0	0	
×		Undertake problem identification, formulation and												2	
Vor	C01	solution through sustained critical investigation	3	3	0	0	0	0		0	0	0		2	
t d		Explain and relate the basics of the study with recent							1						
oje	C02	research and available literature	0	3	0	3	0	0		0	0	0	0	0	
<u>ъ</u>	002	Analyze and summarize the important features of the							3.00						2.50
E03	CO3	study.	0	0	0	3	3	0		0	0	0	0	0	
DS		Develop strong writing skills & ability to deliver a													1 Xo
1CB	CO4	presentation on the topic of his subject	0	0	0	0	3	3	-		0	0	0	0	Sor 9
Ъ Б		Evaluate critical thinking & communication skills needed						_			6			2	Princh
5	CO5	in professional spheres	0	0	0	0	0	3				U	0	3	KING

Course	000	CO Description					PO					PSO			
Name	cos	CO Description	1	2	3	4	5	6	Average	1	2	3	4	5	Average
			Disci	oline S	pecific	Electi	ves								
entation	C01	Explain basic principle of preparative and analytical centrifugation	3	3	0	0	0	0		0	3	0	0	0	
strume hnique	CO2	Apply polyacrylamide gel electrophoresis	0	0	0	0	0	0	2.00	0	3	0	0	0	2.00
E04: In Biotec	CO3	Compare different chromatographic techniques	0	0	0	0	3	0	3.00	0	3	0	0	0	3.00
CBDSI and	CO4	Assemble column packing in column chromatography	0	0	0	0	3	3		0	0	0	0	3	
NGM	CO5	Illustrate ray diagrams of different types of microscopy and assess their magnification	0	0	0	0	3	0		0	0	0	0	3	
es in	CO1	Outline the idea of genome evolution and metagenomics	3	3	0	0	0	0		0	0	0	0	0	
Advanc Iogy	CO2	Relate host pathogen relationship, HGT through evolution	0	3	3	0	0	0		0	3	0	0	0	
SE05: /	CO3	Estimate metagenomic DNA through practical process	0	0	0	3	3	0	3.00	0	0	3	0	0	3.00
MCBD	CO4	Perform PCR amplification of metagenomic DNA and analyze the result using algorithm.	0	0	0	3	3	3		0	0	0	0	0	
ng	CO5	Construct network of metabolic pathways for given bacteria based on Systems Biology.	0	0	0	0	3	3		0	0	0	0	3	

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Course	COs	CO Description					PO	)				PSC	)		
Name			1	2	3	4	5	6	Average	1	2	3	4	5	Average
	1		iene	eric I	Elect	ives									
		Recognize, identify and differentiate the													
BV		internal and external structures of													
irolo	C01	prokaryotic cells and virus.	3	0	0	2	0	0		3	0	0	0	0	
Š		Understand the basics of bacterial	-			-	-	-	-		-		-		-
an		reproduction and estimate microbial													
уgс	CO2	growth under lab conditions.	0	0	0	0	0	0	2 00	3	0	3	0	0	
iolo		Determine microbial count using							2.88	-	-				3.00
ter		laboratory culture and detect bacteria by													
Bac	C03	simple and differential staining	0	0	0	3	3	0		3	0	3	0	0	
÷	604	List general properties and importance of													
B	04	viruses and subviral particles	3	0	0	0	0	0		0	0	0	0	0	
	COF	Develop strategies for isolation and													
4	COS	propagation of plant viruses	0	3	3	0	0	3		0	0	0	0	3	
men	CO1	Identify various microbial habitat	0	3	2	0	0	0		0	0	0	0	0	
uo												-			
nvir	CO2	Compare different microbial interactions		2	2										
u L		Demonstrate the function of microhan an	0	3	3	0	0	0		0	0	0	0	0	
i sa	603	environment	2					_	2.90						3.00
qo	005		3	0	0	0	0	0		0	0	0	3	0	
Aicr	CO4	Assess the efficacy of waste management		2	2	2									
2 S		Develop programming for sustained by	U	3	3	3	3	0		0	0	0	0	3	
ц Ц	CO5	rural & urban development													
5	005		0	0	0	0	0	3		0	0	0	0	3	

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Course Name	COs	CO Description					PO	)				PS	0		
			1	2	3	4	5	6	Average	1	2	3	4	5	Average
		Community of the second s	sene	ric E	lect	ives									
d Food	CO1	Summarize the history and development of Industrial Microbiology	3	0	0	0	0	0		3	0	0	0	0	
trial an ogy	CO2	Isolate industrially important microbial strains and design the fermentation media	0	0	0	3	3	3	_	0	0	0	0	3	
3: Indust licrobiolo	CO3	Compare the industrial fermentation and recovery process of certain microbial products	0	o	0	3	3	3	3.00	0	3	0	3	0	3.00
MCBGE0 M	CO4	Identify different factors that affect the microbial growth, spoilage of food and food borne illness	3	0	0	0	0	0		3	0	0	3	0	
9 N	CO5	Assess foods based on their fermentation process and preservation processes	0	0	0	3	0	3	-	0	0	0	3	0	
ineering	C01	List the milestones in genetic engineering and biotechnology	3	0	0	0	0	0		3	0	0	0	0	
etic Eng Inology	CO2	Compare the different strategies and nmethods in molecular cloning	0	0	0	0	2	2		0	3	0	0	0	
: Gene iotech	СОЗ	Analyze the outcome of DNA amplification and sequencing experiments	0	0	0	3	3	0	2.71	0	0	3	0	3	3.00
1CBGE04: and B	CO4	Assess the importance of genetic engineering and biotechnology in human welfare	0	3	0	0	0	3		0	3	0	3	0	
NGN	CO5	Apply the intellectual property rights in scientific works and communication	0	0	0	0	3	0		0	0	3	0	0	
llar	C01	Discuss the structures of nucleic acid	0	0	0	0	0	0		0	3	0	0	0	
V V	CO2	Analyze the transcription and post transcriptional events	0	0	0	3	0	0	-	0	0	3	0	0	
s and I Biolog	СОЗ	Assess the DNA content, resolution and effect of mutagens	0	0	0	3	0	3	3.00	0	0	0	0	3	3.00
enetic	CO4	Categorize and compare different mechanisms of genetic exchange	0	0	0	0	0	0		0	3	0	3	0	
	CO5	elements in evolution	0	0	0	0	3	0		0	0	3	0	0	

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Course Name	CO	S CO Description					P	0						pc		
		•		1	2	3	4	5	6	Averag	e	1	2	3	4	5 Average
and Indian	C01	Define, demonstrate and apply the daily routine, self-evaluation & Integral Personality Development	Skill E	Enhan O	ceme	nt Co	ours 0	es O	0		0	0	) (	) (		
Ication	C02	Demonstrate, and apply the Power of thoughts & the Science of Peace	0	0	3		0	0	0		0	0	0		3	_
ue Edu ulture	СОЗ	Demonstrate the relation between Values and enlightened citizenship	0	0	3		5	0	0	3.00	0	0	2	0	0	-
01: Val C	CO4	Discuss the awareness about the Indian Practice and Culture	0	0	0	3	3	0	0	0.00	0	0	0	0	0	2.50
SEC	C05	Demonstrate and practice the Four Yogas	0	0	0	C	,	0	3					+		-
NGMCB	CO6	Explain and analyse the idea about Modern India: her hopes, challenges and Swami Vivekananda	0	0	0	3		0	3		0	0	0	0	0	_
e (Spoken er)	C01	Draw gene-regulatory and biochemical networks by CellDesigner, a structured diagram editor.	0	0	0	0		0	0		0	3	0	0	0	
Design	CO2	Design models of biochemical reaction networks in Computer-readable format.	0	0	0	0		3	0		0	3	0	0	0	
n Cell	соз	Analyze simulation and other analysis packages.	0	0	0	0		3	3	3.00	0					2.00
torial o	CO4	Relate data representation with various pictorial representations.	0	0	0	0	0	)	0		0	3	0	0	0	3.00
2	05	Browse and modify existing SBML models with references to existing databases, simulate and view the dynamics through an intuitive graphical interface.	0	0	0	0	3		3		0	0	0	0	3	7

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Course Name	COs	CO Description		1			РО						PSO		
			1	2	3	4	5	6	Average	1	2	3	4	5	Average
-		Recall English Phonetic Symbols and	Ability	Enhance	ement C	ompulso	ry Cour	ses							
nunicatior	CO1	demonstrate their use with emphasis on various scientific terms.	0	3	0	0	0	0		3	0	0	0	0	
ish Comn	CO2	Utilize various processes of communication	0	3	0	0	0	0	-	0	0	0	0	0	
C 01: Engl	CO3	Compare and analyze dialogue, group discussion, presentation, interview techniques	0	0	0	0	3	0	3.00	0	0	0	0	0	3.00
CBAEC	CO4	Judge different techniques of reading and writing skills.	0	0	0	0	3	3		0	0	0	0	0	
NGMG	CO5	Develop the skill to create original write up in the form of report, proposal, paragraph, review etc.	0	0	0	3	3	0		0	0	0	0	3	
al Science	C01	Define and demonstrate the concept, components and function of natural resources and ecosystems.	3	0	0	0	0	0		0	0	0	3	0	
ironment	CO2	Define, illustrate and analyse the cause, effects and control measures of various environmental pollutants.	0	0	3	0	0	0		0	0	3	0	0	
2: Env	СО3	Demonstrate the basic idea about the disasters and its management.	0	0	3	0	0	0	3.00	0	0	0	0	0	3.00
CBAECC (	CO4	Illustrate and apply the knowledge about the social, environmental issues and environmental legislation.	0	0	0	3	0	0	-	0	0	0	0	0	
NGN	CO5	Define, demonstrate and evaluate the impact of human population on the Environment	0	0	0	0	0	3	-	0	0	0	0	0	
		Grand Ave	age						2.93			Lori	, da	L.	2.90
											1	Ram	Princip akrishna nda Cent	Mission enary C a - 700 1	1 ollege 18