

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Fundamentals of Biochemistry	undamentals of Biochemistry											
Course Code	BSMB101[T]												
Course Outcomes & Bloom's Level	CO1- To remember the structure of amino acids, etc(BL1-Remember CO2- To comprehend the biologic elaborate the structure and function CO3- To understand the important Apply) CO4- To provide experimental base biomolecules in food samples.(BL CO5- To evaluate the applications and industries(BL5-Evaluate)	r) al material; and its ons of different bior ce of biophysical cl sis, and to enable s _4-Analyze)	relation to living matter and molecules (BL2-Understand) hemistry and its applications. (BL3- students to analyze the various										
Course Elements	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics × Gender × Human Values × Environment ×	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics × Gender × Human Values ×											

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	2	2	-	-	-	2	-	-	1	-	1
CO2	2	3	2	2	2	2	-	-	-	2	-	-	1	-	3
CO3	3	1	1	-	1	-	-	-	-	-	-	-	3	2	3
CO4	3	2	-	2	1	-	-	-	-	-	-	-	2	3	3
CO5	3	1	-	2	1	-	-	-	-	-	-	-	2	2	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	General Microbiology		
Course Code	BSMB102[T]		
Course Outcomes & Bloom's Level	CO1- To identify the basic concept communication approaches for mi CO2- To understand the gene transmutations and their analysis (BL2- CO3- To describe comprehensive preparation pipelines (BL3-Apply) CO4- To provide experimental base concepts of microbial evolution, pl microbial genetics(BL4-Analyze) CO5- To apply Appraise the current frameworksthat impact biotechnology productive interactions in diverse to Evaluate)	(BL1-Remember) and a detailed insight into sterilization processes and media students to analyse the basic al aspects, and elements of by control, and legal naviours that foster positive and	
Course Elements	Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment X	SDG (Goals)	SDG4(Quality education)

	COs PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12 PSO1 PSO2 PSO3														
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	3	3	1	3	-	-	-	-	-	-	1	2	3
CO2	2	3	3	2	1	3	1	-	-	-	-	-	2	3	3
CO3	3	3	1	1	3	3	-	-	-	-	-	-	3	3	3
CO4	1	3	1	3	1	3	-	-	-	-	-	-	1	3	3
CO5	2	1	3	3	3	2	2	-	-	-	-	-	2	1	1
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Cell Structure and Dynamics		
Course Code	BSMB103[T]		
	CO1- Students should develop the components of prokaryotic and eu membranes, and organelles (BL1 CO2- Students will understand ho and utilize energy in cells(BL2-Un CO3- Students will recognize the division(BL3-Apply) CO4- Students will apply their kno changes or losses in cell function(CO5- Students will create a mode	karyotic cells, espe -Remember) w these cellular co derstand) cellular component wledge of cell biolo BL4-Analyze)	ecially macromolecules, mponents are used to generate is underlying mitotic cell ogy to selected examples of
Course Elements	Skill Development X Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment X	SDG (Goals)	SDG4(Quality education)

COs	P01	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	3	3	2	3	-	-	-	-	-	-	-	3	2
CO2	1	2	3	1	2	1	1	-	-	-	-	-	3	2	2
CO3	1	1	1	1	-	1	-	-	-	-	-	-	3	2	1
CO4	3	1	1	3	-	-	1	-	-	-	-	-	2	1	1
CO5	1	1	2	3	1	2	-	-	-	-	-	-	2	1	1
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Bioinstrumentation									
Course Code	SECI[T]									
Course Outcomes & Bloom's Level	 O1- The course prepares the student to understand the Bio-Instrumentation; and how it interacts with living and non-living molecules. and how it predicts their structure and function.(BL2-Understand) O2- The subject Fundamental of Bio-Instrumentation is designed to under graduate students of biotechnology for understanding of basic concepts of each and every part f Bio-Instrumentation and their types. (BL2-Understand) O3- The course aims to provide experimental basis, and to enable students to cquire a specialized knowledge and understanding.(BL4-Analyze) O4- The course aims to provide basis of analyzing the applications of Bio-Instrumentation in various fields such as research and industries.(BL4-Analyze) O5- To apply the understanding of Bio-Instrumentation in various iological Samples and to evaluate the applications of Bio-Instrumentation in various edds such as research and industries (BL3-Apply) 									
Course Elements	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics X Gender X Human Values X Environment X	SDG (Goals)	SDG4(Quality education)							

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	3	2	2	3	1	2	3	1	1	3	1	2	2
CO2	1	2	1	2	2	3	2	1	2	1	2	2	3	2	1
CO3	1	3	2	1	3	3	2	1	2	2	1	3	2	1	2
CO4	2	3	3	3	1	2	2	3	1	2	2	2	3	3	2
CO5	1	2	2	1	3	2	1	3	1	3	2	1	2	1	1
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Environmental Science		
Course Code	VACI[T]		
Course Outcomes & Bloom's Level	limitations.(BL1-Remembe CO2- To Understand the co Understand) CO3- To develop positive at disaster management by ac (BL3-Apply) CO4- Acquire expertise and and techniques of monitorir environment instrumentatio implementation, and mainter	r) oncepts of ecos ttitude towards dopting advance d skills needed ng, Environmer n and control s enance.(BL4-A s for to commu	unicate, prepare, plan and implement the rojects. (BL5-Evaluate)
Course Elements	Skill Development X Entrepreneurship X Employability X Professional Ethics X Gender X Human Values X Environment √	SDG (Goals)	SDG1(No poverty) SDG3(Good health and well-being) SDG4(Quality education) SDG5(Gender equality) SDG6(Clean water and sanitation) SDG7(Affordable and clean energy) SDG8(Decent work and economic growth) SDG10(Reduced inequalities) SDG11(Sustainable cities and economies) SDG12(Responsible consuption and production) SDG13(Climate action) SDG13(Climate action) SDG15(Life on land) SDG17(Partnerships for the goals)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	-	-	-	-	1	2	-	-	-	-	1	-	-
CO2	1	2	-	-	-	-	1	2	-	-	-	-	1	-	-
CO3	1	2	-	-	-	-	1	2	-	-	-	-	-	-	-
CO4	1	2	-	-	-	-	3	2	-	-	-	-	-	2	-
CO5	1	2	-	-	-	-	3	2	-	-	-	-	-	-	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	English		
Course Code	AEC I [T]		
Course Outcomes & Bloom's Level	CO1- Determine interpersonal sk (BL1-Remember) CO2- Elaborate creativity and lat CO3- to evaluate themselves by their performances.(BL3-Apply) CO4- Paraphrase text(s) and use CO5- Design and present/publish	eral thinking. (BL2- giving oral present e appropriate refere	Understand) ations and will receive feedback on encing styles(BL4-Analyze)
Course Elements	Skill Development ✓ Entrepreneurship X Employability X Professional Ethics X Gender X Human Values X Environment X	SDG (Goals)	SDG4(Quality education) SDG5(Gender equality)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	-	-	-	2	2	-	-	-	2	-	-	1	-	1
CO2	2	2	1	2	2	2	-	-	-	2	-	-	1	-	3
CO3	2	1	1	-	1	-	-	-	-	2	-	-	3	2	3
CO4	3	2	-	2	1	-	-	-	-	2	-	-	2	3	3
CO5	3	2	-	2	1	-	-	-	-	2	-	-	2	2	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Animal Diversity		
Course Code	BSBT GE I [T]		
Course Outcomes & Bloom's Level	CO1- To describe general taxono CO2- To understand the taxonom affinities and their association with CO3- To understand the importan Apply) CO4- To provide experimental bas classification and animal identifica CO5- To evaluate the applications development.(BL5-Evaluate) CO6- To apply the understanding their phylogeny in organic evolution	y of invertebrates a n evolution and phy ce of kingdom Anir sis, and to enable s ation (BL4-Analyze) s of taxonomy in va of animal diversity	and vertebrates animals, their vlogeny. (BL1-Remember) malia and its applications (BL3- students to basic concept of) rious fields such as research and
Course Elements	Skill Development X Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment X	SDG (Goals)	SDG4(Quality education) SDG15(Life on land)

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COs	P01	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	3	1	2	2	-	-	-	-	-	-	-	1	2	3
CO2	2	3	1	2	2	-	-	-	-	-	-	-	2	2	3
CO3	1	2	2	1	1	-	-	-	-	-	-	-	2	1	3
CO4	1	2	2	3	1	-	-	-	-	-	-	-	1	1	2
CO5	1	2	3	1	3	-	-	-	-	-	-	-	1	1	2
CO6	1	2	-	-	2	-	-	-	-	-	-	-	-	2	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Immunology		
Course Code	BSMB 202(T)		
Course Outcomes & Bloom's Level	Remember) CO2- To understand the Diffe Understand) CO3- To understand the con Understand) CO4- To apply the use of Pro	erent cells & protent nection of immur	nmunological Barriers of the body (BL1- eins involved in Immune system (BL2- ne system failure & disorders. (BL2- s in antibody formation (BL3-Apply) s & Antibodies in Diagnostic & Medical
Course Elements	Skill Development ✓ Entrepreneurship × Employability ✓ Professional Ethics × Gender × Human Values × Environment ×	SDG (Goals)	SDG3(Good health and well-being) SDG4(Quality education)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	-	2	2	-	1	-	-	-	-	-	1	2	2
CO2	1	2	2	3	1	3	1	-	-	-	-	-	1	2	2
CO3	1	2	1	2	1	2	2	-	-	-	-	-	1	2	2
CO4	1	2	1	2	1	2	2	-	-	-	-	-	3	3	3
CO5	1	2	2	1	2	-	2	-	-	-	-	-	3	2	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Analytical Chemistry		
Course Code	BSMB 203 (T)		
Course Outcomes & Bloom's Level	CO1- To remember basic concep Remember) CO2- To understand the difference Understand) CO3- To use/apply the basic stati correct result and analytical meth CO4- To Analyse Qualitative and CO5- To Evaluate the data obtain	ce between the ana istical treatment of iods (BL3-Apply) Quantitative aspec	Ilytical techniques(BL2- the analytical data for getting a
Course Elements	Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment X	SDG (Goals)	SDG4(Quality education)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	1	-	-	-	-	-	-	-	-	-	3	3	2
CO2	3	3	1	-	-	-	-	-	-	-	-	-	3	2	1
CO3	3	1	-	2	-	-	-	-	-	-	-	-	1	1	2
CO4	2	3	-	-	-	-	-	-	-	-	-	-	1	1	2
CO5	2	2	-	-	-	-	-	-	-	-	-	-	2	2	1
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Molecular Biology –I		
Course Code	BSMB201(T)		
Course Outcomes & Bloom's Level	CO1- To understand the basic ter interactions(BL2-Understand) CO2- To identify and isolate the g CO3- To compare and analyze the samples(BL4-Analyze) CO4- To evaluate the different fra molecular techniques(BL5-Evalu CO5- To apply the understanding development (BL1-Remember)	genomic DNA from ne different DNA pre agments of DNA us r ate)	the different samples. (BL3-Apply) esent among the various ing restriction enzymes and
Course Elements	Skill Development X Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment X	SDG (Goals)	SDG4(Quality education)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	2	2	-	-	-	2	-	-	1	1	1
CO2	3	3	2	2	2	2	-	-	-	2	-	-	1	1	3
CO3	3	1	1	-	1	-	-	-	-	-	-	-	3	2	3
CO4	3	2	-	2	1	-	-	-	-	-	-	-	2	3	2
CO5	3	1	-	1	1	-	-	-	-	-	-	-	2	2	2
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Basics of Forensic Science		
Course Code	BSMB SEC II (T)		
Course Outcomes & Bloom's Level	of crime in forensic science.(BL1 CO2- To comprehend the human Understand) CO3- To understand the importar in forensic science.(BL2-Unders)	-Remember) genetics, mutation nce of various chror tand) sis, of detection an of various identific	
Course Elements	Skill Development ✓ Entrepreneurship ✓ Employability × Professional Ethics × Gender × Human Values × Environment ×	SDG (Goals)	SDG4(Quality education)

COs	P01	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	2	2	-	-	-	2	-	-	1	-	1
CO2	2	3	2	2	2	2	-	-	-	2	-	-	1	-	3
CO3	3	1	1	-	-	-	-	-	-	-	-	-	3	2	3
CO4	3	2	1	1	-	-	-	-	-	2	-	-	2	3	2
CO5	2	2	1	1	-	-	-	-	-	2	-	-	2	2	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	India in 21st Century	dia in 21st Century										
Course Code	BSMB VAC II (T)											
Course Outcomes	good and concerned India CO2- The students will ha Understand) CO3- The students will ha	an citizen (BL1- l ave an understa ave an analyse ourse, students	anding of making of India as a nation . (BL2- salient features of modern India . (BL3-Apply) would analyze intellectually well equipped to									
	Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values ✓ Environment ✓	SDG (Goals)	SDG1(No poverty) SDG3(Good health and well-being) SDG4(Quality education) SDG5(Gender equality) SDG10(Reduced inequalities) SDG12(Responsible consuption and production) SDG13(Climate action)									

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	-	-	2	1	-	-	1	-	-	-	-	1
CO2	-	-	-	-	-	1	1	-	1	-	-	1	-	-	1
CO3	-	-	-	-	-	1	3	-	-	-	-	-	-	-	-
CO4	-	-	-	-	-	2	-	-	-	1	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Hindi I	lindi l											
Course Code	BSMB AECII (T)												
Course Outcomes & Bloom's Level	माध्यम से संम्भव है। पाठ्यक्रम में व्य CO2- ज्ञान को अर्थपूर्णता देने में भा	ाकरण ,एवं लेखन प षा एक सशक्त आध ग्रहण कर सकें ,शुद् _3-Apply)	द्र -स्पष्ट लिख सकें एवं वक्ता के मनोभावों को										
Course Elements	Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender ✓ Human Values ✓ Environment X	SDG (Goals)	SDG3(Good health and well-being) SDG4(Quality education)										

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	1	2	2	-	-	-	-	-	-	-	-	2	-
CO2	2	3	1	2	2	-	-	-	-	-	-	-	-	2	-
CO3	2	2	1	1	1	-	-	-	-	-	-	-	-	2	-
CO4	1	2	-	-	-	-	-	-	-	-	-	-	-	1	-
CO5	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Plant Ecology	lant Ecology											
Course Code	BSMBGE II (T)												
Course Outcomes & Bloom's Level		nd its conservation f India and different n, global warming a	(BL2-Understand)										
Course Elements	Skill Development X Entrepreneurship X Employability √ Professional Ethics X Gender X Human Values X Environment √	SDG (Goals)	SDG4(Quality education) SDG5(Gender equality)										

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2	2	2	3	3	3	3	3	3	3	2	2	3
CO2	2	1	2	1	2	3	3	3	3	3	3	3	2	1	1
CO3	1	2	1	1	2	3	3	3	3	3	3	3	3	2	1
CO4	1	1	1	1	1	3	3	3	3	3	3	3	3	1	1
CO5	2	2	2	2	1	3	3	3	3	3	3	3	2	2	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	General anatomy & comparative	anatomy of Vertebra	ates
Course Code	BSMBGE II (T)		
	CO1- To describe basic concepts animals.(BL1-Remember) CO2- To understand the Anatomy, vertebrates(BL2-Understand) CO3- To understand the important CO4- To provide experimental bas knowledge and understanding in a Analyze) CO5- To evaluate the applications development, medical science ger CO6- To apply the understanding histology in various fields such as	histology, and com ce of Anatomy and sis, and to enable st advanced the field of of genetics in vario netic engineering et of analysing the ap	its applications(BL3-Apply) tudents to acquire a specialized of Anatomy and histology(BL4- bus fields such as research and tc(BL5-Evaluate) plications of Anatomy and
Course Elements	Skill Development X Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values ✓ Environment X	SDG (Goals)	SDG5(Gender equality)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	3	1	2	2	-	-	-	-	-	-	-	1	2	3
CO2	2	3	1	2	2	-	-	-	-	-	-	-	2	2	3
CO3	2	2	2	1	1	-	-	-	-	-	-	-	2	1	3
CO4	1	2	2	1	1	-	-	-	-	-	-	-	1	1	2
CO5	1	2	1	1	2	-	-	-	-	-	-	-	1	1	2
CO6	1	2	2	-	-	-	-	-	-	-	-	-	-	-	2



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	General anatomy & comparative a	eneral anatomy & comparative anatomy of Vertebrates												
Course Code	BSMBGE II (P)													
	CO1- To describe basic concepts animals.(BL1-Remember) CO2- To understand the Anatomy, vertebrates(BL2-Understand) CO3- To understand the important CO4- To provide experimental bas knowledge and understanding in a Analyze) CO5- To evaluate the applications development, medical science ger CO6- To apply the understanding histology in various fields such as	histology, and com ce of Anatomy and is, and to enable st advanced the field of of genetics in vario netic engineering et of analysing the ap	its applications(BL3-Apply) cudents to acquire a specialized of Anatomy and histology(BL4- bus fields such as research and cc(BL5-Evaluate) plications of Anatomy and											
Course Elements	Skill Development X Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment X	SDG (Goals)	SDG5(Gender equality)											

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	3	1	2	2	-	-	-	-	-	-	-	1	2	3
CO2	2	3	1	2	2	-	-	-	-	-	-	-	2	2	3
CO3	2	2	2	1	1	-	-	-	-	-	-	-	2	1	3
CO4	1	2	2	1	1	-	-	-	-	-	-	-	1	1	2
CO5	1	2	1	1	2	-	-	-	-	-	-	-	1	1	2
CO6	1	2	2	-	-	-	-	-	-	-	-	-	-	-	2



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Molecular Biology-II	olecular Biology-II												
Course Code	BSMB301(T)													
	nucleic acid from various samples	and its relation to t nce of Molecular ed sis, and to enable s s (BL3-Apply)	the formation of Protein(BL2-											
Course Elements	Skill Development X Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment X	SDG (Goals)	SDG4(Quality education)											

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	-	-	-	-	1	1	-	-	-	-	1	3	1
CO2	1	2	-	-	-	-	2	1	-	-	-	-	2	3	2
CO3	1	2	-	-	-	-	2	2	-	-	-	-	2	2	2
CO4	1	2	-	-	-	-	2	3	-	-	-	-	3	2	1
CO5	1	2	-	-	-	-	-3	3	-	-	-	-	3	2	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Plant Tissue Culture		
Course Code	BSMB302(T)		
Course Outcomes & Bloom's Level	CO1- To understand and recall th plant tissue culture(BL1-Rememi CO2- To prepare the plant tissue inoculation(BL2-Understand) CO3- To observe and differentiate different types of nutrient media.(CO4- To standardize the technique development of in vitro cultures.(I CO5- To develop in vitro regenerate techniques of plant tissue culture	ber) culture media using the behavior of va BL4-Analyze) ues and nutrient me BL3-Apply) ated and transgenio	g sterilization techniques for arious explants towards the
Course Elements	Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment X	SDG (Goals)	SDG4(Quality education)

	-	_	-		-		_	-		-					
COs	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	2	-	2	2	-	-	-	2	-	-	1	1	1
CO2	3	3	2	2	2	2	-	-	-	2	-	-	1	-	3
CO3	3	1	1	-	1	1	-	-	-	-	-	-	3	2	3
CO4	2	2	-	2	1	1	-	-	-	-	-	-	2	3	3
CO5	3	2	-	2	1	-	-	-	-	-	-	-	2	2	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Genetics		
Course Code	BSMB303(T)		
Course Outcomes & Bloom's Level	CO2- To understand the Me CO3- To understand the imp CO4- To provide experiment knowledge and understandi CO5- To evaluate the applic Evaluate)	endalian and no portance of here tal basis, and to ng in advanced cations of genet nding of heredi	cepts of genetics(BL1-Remember) n Mendalian inheritance(BL2-Understand) edity and its applications(BL3-Apply) o enable students to acquire a specialized I the field of genetics(BL4-Analyze) ics in various fields such as research (BL5- ty and variation and genetic disorders and dustries(BL6-Create)
Course Elements	Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment X	SDG (Goals)	SDG1(No poverty) SDG4(Quality education) SDG11(Sustainable cities and economies) SDG14(Life below water) SDG15(Life on land)

					_			-	-	-		-			
COs	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	3	1	2	-	-	-	-	-	-	-	-	1	2	3
CO2	2	3	1	2	-	-	-	-	-	-	-	-	2	2	3
CO3	2	2	2	1	-	-	-	-	-	-	-	-	2	1	3
CO4	1	2	2	1	-	-	-	-	-	-	-	-	1	1	2
CO5	1	2	1	1	-	-	-	-	-	-	-	-	1	1	2
CO6	-	1	-	2	-	-	-	-	-	-	-	-	-	1	1



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Biostatistics and Computer Applic	ations	
Course Code	BSMB SECIII (T)		
	CO1- The course prepares the stu Fundamentals of Biostatistics and prospects(BL1-Remember) CO2- The subject Fundamentals of designed for under graduate stude concepts of each and every division fields. (BL2-Understand) CO3- The course aims to provide acquire a specialized knowledge a CO4- The course aims to provide of Biostatistics and Computer App (BL3-Apply) CO5- The course aims to provide and use of statistical tools in resea	Computer Applicat of Biostatistics and ents of biotechnolog on of the subject alo experimental basis and understanding basis of analyzing lications in various basis of experiment	tions, its applications and future Computer Applications is gy for understanding of basic ong with its applications in other a, and to enable students to BL2-Understand) the applications of Fundamentals fields of research and industries.
Course Elements	Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment X	SDG (Goals)	SDG4(Quality education)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	-	-	-	-	-	-	1	2	-	-	1	2	-
CO2	1	2	-	-	-	-	-	-	1	1	-	-	2	1	-
CO3	1	2	-	-	-	-	-	-	1	1	-	-	1	2	-
CO4	1	2	-	-	-	-	-	-	1	2	-	-	2	1	-
CO5	1	2	-	-	-	-	-	-	1	2	-	-	1	2	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Disaster Management	Disaster Management											
Course Code	BSMB VACIII (T)												
	CO2- To understand the ca case studies of Global and CO3- To learn about risk re mitigating industrial disaste CO4- To understand the co Measures(BL4-Analyze) CO5- To apply the National	Auses and impart National disageduction appro Pers. (BL3-Appl y Dincept of Disaged National Acts and politic	aches of disasters with safety issues in										
Course Elements	Skill Development X Entrepreneurship X Employability ✓ Professional Ethics X Gender ✓ Human Values X Environment √	SDG (Goals)	SDG1(No poverty) SDG3(Good health and well-being) SDG4(Quality education) SDG6(Clean water and sanitation) SDG8(Decent work and economic growth) SDG10(Reduced inequalities) SDG11(Sustainable cities and economies) SDG12(Responsible consuption and production) SDG13(Climate action) SDG15(Life on land) SDG17(Partnerships for the goals)										

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	-	-	-	-	1	2	-	-	-	-	1	-	-
CO2	1	2	-	-	-	-	1	2	-	-	-	-	1	-	-
CO3	1	2	-	-	-	-	1	2	-	-	-	-	-	-	-
CO4	1	2	-	-	-	-	1	2	-	-	-	-	-	2	-
CO5	1	2	-	-	-	-	1	2	-	-	-	-	-	-	3
CO6	1	2	-	-	-	-	1	2	-	-	-	-	-	-	3



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	English II	
Course Code	BSMB AECIII (T)	
Course Outcomes & Bloom's Level	 CO1- Determine interpersonal skills and be an effectiv (BL1-Remember) CO2- They will be able to analyze and improve their sterms of fluency and comprehensibility.(BL2-Understa CO3- They will be able to evaluate themselves by givin receive feedback on their performances.(BL3-Apply) CO4- They will be able to develop their reading speed articles.(BL4-Analyze) CO5- They will be able to compare their reading fluence 	beaking ability in English both in and) ng oral presentations and will and comprehension of academic
Course Elements	Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values ✓ Environment X	SDG (Goals)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	-	1	2	3	-	-	3	2	-	2	3	2	2	-
CO2	-	2	2	3	-	2	-	2	3	-	-	-	-	-	-
CO3	2	-	3	-	2	2	2	3	2	-	-	-	-	2	1
CO4	2	-	3	-	2	-	3	-	2	-	3	2	-	2	3
CO5	2	-	2	-	-	-	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Organic Chemistry		
Course Code	BSBT GE III (T)		
Course Outcomes & Bloom's Level	CO1- To remember the Stereoche compounds(BL1-Remember) CO2- To understand the basic prir CO3- To apply the basic chemical CO4- To analyze the presence of Analyze) CO5- To evaluate the applications various industrial products like pha Evaluate)	nciples of Chemistr test on natural org functional groups in of organic reaction	y (BL2-Understand) anic compounds (BL3-Apply) n an organic compounds (BL4-
Course Elements	Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment X	SDG (Goals)	SDG4(Quality education)

											-				
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	2	3	3	-	-	-	-	-	-	-	1	2	2
CO2	2	2	1	3	2	-	-	-	-	-	_	-	1	1	1
CO3	1	2	3	2	2	-	-	-	-	-	-	-	1	2	2
CO4	2	2	2	3	3	-	-	-	-	-	-	-	1	2	3
CO5	2	1	3	3	2	-	-	-	-	-	-	-	1	2	2
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Inorganic Chmeistry	organic Chmeistry											
Course Code	BSMBGEIII (T)												
Course Outcomes & Bloom's Level	reduction, Complexes , Lanthanid CO2- To understand Properties an compounds, Acids and Bases , No	les, Actinides (BL1- nd uses of Transitio on aqueous solven nents, Complexes, Bonding ,Magnetic I	on elements, Coordination ts Lanthanides, Actinides(BL2- Lanthanides, Actinides in the Properties of Transition elements,										
Course Elements	Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment X	SDG (Goals)	SDG4(Quality education)										

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	1	-	-	-	-	-	-	-	-	3	3	2	-
CO2	3	2	1	-	-	-	-	-	-	-	-	3	3	2	-
CO3	2	2	1	-	-	-	-	-	-	-	-	2	2	1	-
CO4	2	3	1	-	-	-	-	-	-	-	-	1	1	2	-
CO5	2	2	2	-	-	-	-	-	-	-	-	1	1	2	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Genetic Engineering, Tools and a	applications	
Course Code	BSMB401(T)		
Course Outcomes & Bloom's Level	Understand) CO3- To understand the importar CO4- To evaluate the application Pharmaceutical industries (BL5-E)	of creating new mo nce Nucleic acid ed s of in various field valuate)	lecules such as DNA & RNA(BL2-
Course Elements	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics ✓ Gender ✓ Human Values X Environment X	SDG (Goals)	SDG4(Quality education)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	3	-	-	1	-	-	-	-	-	-	1	1	2
CO2	1	2	3	-	-	3	2	-	-	-	-	-	2	-	-
CO3	1	2	3	-	-	1	1	-	-	-	-	-	-	2	1
CO4	1	2	3	-	-	1	-	-	-	-	-	-	2	-	3
CO5	1	2	3	-	-	2	-	-	-	-	-	-	2	-	1
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Bioprocess Engineering									
Course Code	BSMB402(T)									
Course Outcomes & Bloom's Level	Engineering, its applications and f CO2- The subject Bioprocess Eng biotechnology for understanding o subject along with its applications CO3- The course aims to provide acquire a specialized knowledge a CO4- The course aims to provide Engineering in various fields of res CO5- The course aims to provide									
Course Elements	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics × Gender × Human Values × Environment ×	SDG (Goals)	SDG4(Quality education)							

-															
COs	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	-	-	-	-	-	-	1	1	-	-	-	-	-
CO2	2	1	-	-	-	-	-	-	1	1	-	-	-	-	-
CO3	1	1	-	-	-	-	-	-	1	1	-	-	-	-	-
CO4	1	2	-	-	-	-	-	-	1	2	-	-	-	-	-
CO5	1	2	-	-	-	-	-	-	1	2	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Enzymology		
Course Code	BSMB403(T)		
Course Outcomes & Bloom's Level	CO1- Student will be able to learn the cell(BL1-Remember) CO2- Student will understand the reaction(BL2-Understand) CO3- Differentiate between equilil kinetic data and estimate importan Understand) CO4- To define and describe the p pathways (inhibition, allosterism)(CO5- To analyze options for apply various industries(BL4-Analyze)	role of co-enzyme brium and steady s nt parameter (Km.) broperties of enzyn BL3-Apply)	cofactor in enzyme catalyzed state kinetics and analyzed simple Vmax, Kcat etc); (BL2- nes in and regulates biochemical
Course Elements	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics X Gender X Human Values X Environment X	SDG (Goals)	SDG4(Quality education)

-															
COs	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	1	2	2	2	-	-	-	-	-	-	2	-	1
CO2	3	1	1	2	2	2	-	-	-	-	-	-	1	2	2
CO3	2	1	1	2	1	1	-	-	-	-	-	-	2	3	1
CO4	3	-	-	1	1	1	1	-	-	-	-	-	1	2	2
CO5	-	-	-	-	1	-	1	-	-	-	-	-	2	-	1
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Bioethics and Biosafety		
Course Code	BSMBSECIV (T)		
Course Outcomes & Bloom's Level	CO1- To remember the basic concepts and view of professional and scientific communication approaches for Bioethics and Biosafety (BL1-Remember) CO2- To understand the Introduction to science, technology and society, issues access-Case studies/experiences from developing and developed countries. Ownership, monopoly and an environmental sustainability, public vs. private fun biotechnology in international relations, globalization and development and their analysis. (BL2-Understand) CO3- To describe comprehensive understanding of Challenges for the Indian Biotechnological research and industries Bioethics – Necessity of Bioethics, diff paradigms of Bioethics – National & International.(BL3-Apply) CO4- To provide Theoretical basis, and to enable students to analyze the basic concepts of the concept of containment level and Good Laboratory Practices (C and Good Manufacturing Practices (GMP). Cartagena Protocol for biosafety (BI Analyze) CO5- To apply Appraise the current regulatory, quality control, and legal frameworksthat impact biotechnology and ethical behaviors that foster positive a productive interactions in diverse bioterrorism and convention on biological weat Social and ethical implications of biological weapons settings (BL5-Evaluate) Skill Development ✓ Employability ×	ety (BL1-Remember) nology and society, issues of nd developed countries. ability, public vs. private funding, and development and their Challenges for the Indian Necessity of Bioethics, different .3-Apply) dents to analyze the basic od Laboratory Practices (GLP) a Protocol for biosafety (BL4- y control, and legal naviors that foster positive and nvention on biological weapons.	
Course Elements	Entrepreneurship X Employability X Professional Ethics X Gender X Human Values √	SDG (Goals)	SDG4(Quality education)

COs	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	3	3	1	3	3	3	1	2	3	1	3	2	3
CO2	1	1	2	3	1	3	3	3	2	1	3	2	1	1	2
CO3	3	3	2	1	3	3	3	2	1	1	3	2	2	3	2
CO4	3	3	3	3	2	2	3	3	1	1	3	2	3	3	2
CO5	3	3	2	2	1	3	3	3	1	1	3	2	3	3	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Environmental Issues and	Sustainable De	evelopment
Course Code	BSMBVACIV (T)		
& Bloom's Loval	challenges and concept of CO2- CO2. To acquire ana through a multidisciplinary CO3- CO3. Ability to design community's sustainable de CO4- CO4. Acquire experti the pathways of processes sustainable development in CO5- CO5. Students acqui	sustainable de lytical skills/me approach; (BL4 n sustainability evelopment (BL se and skills to and procedure nitiatives. (BL1 - re skills to com	performance metric to assess the impact on .5-Evaluate) evaluate feedback systems that can readjust as to ensure success in implementing
Course Elements	Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values ✓ Environment √	SDG (Goals)	SDG4(Quality education) SDG5(Gender equality) SDG12(Responsible consuption and production) SDG13(Climate action)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	3	2	-	-	-	1	-	1	-	-	-	2	2	3
CO2	1	3	2	-	-	-	2	-	1	-	-	-	1	2	3
CO3	3	2	1	-	-	-	3	-	2	-	-	-	1	2	2
CO4	2	3	1	-	-	-	3	-	2	-	-	-	-	1	1
CO5	2	3	1	-	-	-	3	-	3	-	-	-	-	-	-
CO6	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	HINDI II		
Course Code	BSMB AECIV		
Course Outcomes & Bloom's Level	CO3- छात्र जीविकोपार्जन के लक्ष्यों	ं बनाये रखना भाषा का सहज संधान क न्य तथा पारम्परिक र	के माध्यम से संम्भव है।(BL2-Understand) र सके ।(BL3-Apply) साहित्य ,लोक कलाएं ,स्थापत्य एवं लेखन
Course Elements	Skill Development ✓ Entrepreneurship × Employability × Professional Ethics × Gender × Human Values √ Environment ×		SDG1(No poverty) SDG3(Good health and well-being) SDG4(Quality education)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	3	3	2	2	-	-	-	-	-	-	3	2	3
CO2	2	1	2	2	-	3	-	-	-	-	-	-	2	2	2
CO3	2	2	2	3	3	2	-	-	-	-	-	-	-	2	3
CO4	1	2	3	2	2	-	-	-	-	-	-	-	3	2	1
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Plant Physiology		
Course Code	BSMB GE IV (T)		
Course Outcomes & Bloom's Level	CO1- To remember the basic con Remember) CO2- To understand the mechani Light and dark reactions.(BL1-Re CO3- To describe the mechanism CO4- To provide experimental ba of plant respiration and different p CO5- To evaluate the growth and periods.(BL5-Evaluate) CO6- To apply the understanding plants(BL6-Create)	sms of photosynthe member) of active and pass sis, and to enable s athways (BL4-Ana development of dif	esis, photophosphorylation and sive adsorption (BL3-Apply) students to analyze the mechanism lyze) fferent plants across geological
Course Elements	Skill Development X Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment ✓	SDG (Goals)	SDG4(Quality education)

COs	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	3	3	-	-	-	-	-	-	-	-	2	3	3
CO2	1	1	2	2	1	2	1	-	-	-	-	-	2	3	2
CO3	1	3	2	2	2	3	1	-	-	-	-	-	3	2	2
CO4	1	3	2	2	2	2	2	-	-	-	-	-	3	1	1
CO5	3	3	1	1	1	1	2	-	-	-	-	-	3	2	1
CO6	1	-	-	1	-	-	-	-	-	-	-	-	-	-	2



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Animal Physiology							
Course Code	BSMB GEIV (T)							
	CO1- To describe fundamental kr CO2- To understand the detailed functioning of nerves and muscles CO3- To understand the importan CO4- To provide experimental bas physiology(BL4-Analyze) CO5- To evaluate the applications development as well as in various CO6- To apply the understanding Medical and clinical, Pathological	concepts of digesti s Hormones and re ce of Physiology a sis, and to enable s of Physiology in v industries (BL5-Ev of Physiology in th	on respiration excretion the production(BL2-Understand) nd its applications(BL3-Apply) students to basic concept of arious fields such as research and valuate) eir future perspective fields i.e.					
Course Elements	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics × Gender × Human Values × Environment ×							

	_	_			_			-	-						
COs	P01	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	1	2	2	2	-	-	-	-	-	-	2	-	1
CO2	3	1	1	2	2	2	-	-	-	-	-	-	1	2	2
CO3	2	1	1	2	1	1	-	-	-	-	-	-	2	3	1
CO4	3	-	-	1	1	1	1	-	-	-	-	-	1	2	2
CO5	-	-	-	-	1	-	1	-	-	-	-	-	2	-	1
CO6	-	2	-	-	1	-	-	-	-	-	-	-	1	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Cellular Metabolism		
Course Code	BSMB 502 (T)		
	CO1- To impart knowledge on structure and functions of the structure and functions of different constructure and functions of different co5- To evaluate the applications of structure and functions of structure and functions of different co5- To evaluate the applications of co5- To evaluate the applications of the structure and functions of	tanding of the meta 2 -Understand) biological material to t biomolecules (BL nolecules in biologi	o living matter and elaborate the .3-Apply) cal samples(BL4-Analyze)
Course Elements	Skill Development ✓ Entrepreneurship X Employability X Professional Ethics X Gender X Human Values X Environment X	SDG (Goals)	SDG4(Quality education)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	2	2	-	-	-	2	-	-	1	-	1
CO2	2	3	2	2	2	1	-	-	-	2	-	-	1	-	3
CO3	3	1	1	2	1	-	-	-	-	-	-	-	3	2	3
CO4	3	2	1	1	1	-	-	-	-	2	-	-	2	3	2
CO5	2	1	1	2	1	-	-	-	-	2	-	-	2	2	2
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Genomics & Proteomics		
Course Code	BSMB 503 (T)		
Course Outcomes & Bloom's Level	(BL2-Understand) CO3- To analyze the various gene characteristics using various tech CO4- To amplify and detect the va development.(BL4-Analyze)	Remember) but major genome on hal genomics for th es isolated from diff hiques.(BL3-Apply arious genes in diffe wase or purify the pro-	databases, Genome analysis, e preparation of genomic libraries. ferent samples for their specific /)
Course Elements	Skill Development ✓ Entrepreneurship X Employability X Professional Ethics X Gender X Human Values X Environment X	SDG (Goals)	SDG4(Quality education)

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COs	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	1	2	2	2	-	-	-	-	-	-	2	-	1
CO2	3	1	1	2	2	2	-	-	-	-	-	-	1	1	2
CO3	2	1	1	2	1	-	2	-	-	-	-	-	3	2	1
CO4	3	1	2	1	1	-	1	-	-	-	-	-	1	3	2
CO5	1	-	-	-	1	-	1	-	-	-	-	-	2	2	1
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Bioinformatics		
Course Code	BSMB501 (T)		
Course Outcomes & Bloom's Level	CO1- The course prepares the str Bioinformatics, its applications an CO2- The course aims to provide acquire a specialized knowledge CO3- The course aims to provide in various fields of research and in CO4- To evaluate the analytical e	d future prospects. experimental basis and understanding basis of analyzing ndustries. (BL3-Ap)	(BL1-Remember) s, and to enable students to (BL2-Understand) the applications of Bioinformatics ply)
Course Elements	Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment X	SDG (Goals)	SDG4(Quality education)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	-	-	-	-	-	-	1	1	-	-	1	2	-
CO2	1	2	-	-	-	-	-	-	1	2	-	-	1	2	-
CO3	1	2	-	-	-	-	-	-	1	2	-	-	2	1	-
CO4	1	2	-	-	-	-	3	-	1	2	-	-	1	2	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Marine Microbiology		
Course Code	SEC V (T)		
Course Outcomes & Bloom's Level	,	L1-Remember) e diseases and wa echnology applicati ant etc.(BL3-Apply	ter borne pathogen (BL2- ons of marine microbiology such as)
Course Elements	Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment ✓	SDG (Goals)	SDG4(Quality education)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	3	3	1	3	3	1	1	1	3	1	2	1	3
CO2	3	1	2	2	1	3	3	1	2	1	3	3	3	2	1
CO3	1	3	1	1	3	3	3	2	1	2	3	2	3	1	2
CO4	2	1	2	1	3	1	3	1	1	2	1	1	1	3	2
CO5	3	3	2	1	3	1	2	3	2	2	1	3	3	2	1
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Organic Farming		
Course Code	SEC V (T)		
Course Outcomes & Bloom's Level	farming including the import (BL2-Understand) CO2- To equip learners with agriculture and the productio CO3- Students will gain han exercises to apply their know CO4- learners will explore the methods to enhance soil fer	ance of sustain the knowledge on of healthy, of ds on experien wledge in a real ne significance tility through co out marketing o	of soil health in organic farming and various mposting and crop rotation. (BL4-Analyze) organic products, understanding consumer
Course Elements	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics X Gender X Human Values X Environment ✓	SDG (Goals)	SDG2(Zero hunger) SDG3(Good health and well-being) SDG4(Quality education) SDG6(Clean water and sanitation) SDG7(Affordable and clean energy) SDG8(Decent work and economic growth) SDG11(Sustainable cities and economies) SDG13(Climate action) SDG15(Life on land)

·	-	_	_	-	-		_	-	-		-				
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	2	1	1	2	-	-	-	-	-	-	2	2	2
CO2	1	2	3	3	2	2	1	-	-	-	-	-	2	1	2
CO3	1	1	1	3	2	2	1	-	-	-	-	-	1	1	1
CO4	2	1	3	2	1	1	1	-	-	-	-	-	2	1	2
CO5	3	1	3	3	1	1	-	-	-	-	-	-	1	2	2
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Environemntal Microbiology		
Course Code	DSE I (T)		
Course Outcomes & Bloom's Level	water, sediments, soil and air. CO3- To describe the diversity Understand) CO4- To demonstrate how div associated with each techniqu	of microbes in sev (BL2-Understan of microbes in the ersity is assessed ie.(BL3-Apply)	veral different environments, including
Course Elements	Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment ✓	SDG (Goals)	SDG4(Quality education) SDG6(Clean water and sanitation)

		-	-	-	-		-	-	-		-				
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1	1	2	2	3	-	-	-	-	-	-	1	3	-
CO2	1	1	1	2	-	3	3	-	-	-	-	-	1	3	3
CO3	2	1	-	1	2	3	3	-	-	-	-	-	2	-	2
CO4	3	3	3	3	3	2	3	-	-	-	-	-	3	1	3
CO5	1	2	1	1	2	3	-	-	-	-	-	-	1	2	1
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Environmental Biotechnolo	nvironmental Biotechnology										
Course Code	DSE I (T)											
	pollutants, taking microbial chemical structure of the co CO2- Students will underst decontamination of soil and for vapor-phase wastes, an CO3- Students will learn at remediation of contaminate CO4- Students will learn at environmental engineering.	and physical/c ompound itself, and the pheno d water, wetlan d composting. oout the environ ed environment oout the use of (BL4-Analyze)	mental quality evaluation, monitoring, and s(BL3-Apply) biosensors in environmental analysis,									
Course Elements	Skill Development X Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment √	SDG (Goals)	SDG4(Quality education) SDG6(Clean water and sanitation) SDG7(Affordable and clean energy) SDG12(Responsible consuption and production) SDG13(Climate action)									

-	-	-	-	_	-	-	-	-	-	-	-	-	_	-	
COs	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	3	2	3	-	2	-	-	-	-	-	3	-	2
CO2	1	2	2	2	-	2	1	-	-	-	-	-	2	3	3
CO3	1	2	2	1	2	2	-	1	-	-	-	-	2	2	3
CO4	1	2	2	2	2	1	2	-	-	-	-	-	2	2	2
CO5	1	2	1	3	2	2	-	-	-	-	-	-	1	1	2
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Bacteriology, mycology and Virolo	cteriology, mycology and Virology												
Course Code	BSMB 601(T)													
Course Outcomes & Bloom's Level	CO1- Describe characteristics of b and various appendages like caps CO2- Differentiate a large number classify bacteria into groups.(BL2- CO3- Describe the nutritional requ knowledge and understanding tha microbes which grow under extrem CO4- Perform basic laboratory exp preserve bacteria in the laboratory Analyze) CO5- Discuss how fungi and algae biopesticides. To illustrate creative manipulation and analysis of geno	ules, flagella or pil of common bacter Understand) irements of bacter t besides common ne environments(E periments to study r; calculate generat e are used as biofe use of modern too	i(BL1-Remember) ria by their salient characteristics; ia for growth; developed bacteria there are several other BL2-Understand) microorganisms ;methods to tion time of growing bacteria(BL4- ertilizers in agriculture and as bls and techniques for											
Course Elements	Skill Development ✓ Entrepreneurship × Employability ✓ Professional Ethics × Gender × Human Values × Environment √													

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	1	1	1	3	3	1	2	1	3	1	2	2	3
CO2	2	1	2	2	1	3	3	2	1	1	3	1	2	3	2
CO3	1	2	1	1	1	3	3	2	1	2	3	2	3	2	3
CO4	2	3	2	3	3	1	1	1	2	1	1	2	2	1	2
CO5	2	3	2	3	3	2	2	1	1	1	1	1	2	1	2
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Food and Dairy Microbiology		
Course Code	BSMB 602 (T)		
Course Outcomes & Bloom's Level	CO1- Explain the interactions bett factors influencing their growth an CO2- Explain the significance and Understand) CO3- Describe the characteristics microorganisms, and methods for Apply) CO4- Explain why microbiological production.(BL3-Apply) CO5- Explain the effects of ferme microbiological quality and status	d survival. (BL1-Re d activities of micro of foodborne, wate their isolation, det quality control pro ntation in food proc	organisms in food. (BL2- erborne and spoilage ection and identification. (BL3- grammes are necessary in food duction and how it influences the
Course Elements	Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment X	SDG (Goals)	SDG4(Quality education)

-															
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	1	2	2	1	-	-	-	-	-	2	3	1	2
CO2	2	2	1	3	1	3	2	-	-	-	-	2	1	2	1
CO3	1	1	2	2	2	1	2	3	-	-	-	1	3	3	2
CO4	3	2	3	3	1	1	3	2	-	-	-	1	2	3	1
CO5	2	3	3	2	3	2	1	2	-	-	-	3	1	2	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Entrepreneurship development	ntrepreneurship development											
Course Code	SEC VI (T)												
	clear and accurate (BL1-Reme CO2- Comprehend and apply b uses internet services to get ac industry.(BL2-Understand) CO3- To demonstrate knowledg supporting the development of	mber) pasic computer we customed & take ge of entrepreneu businesses/entre p achieve a safe w vironment regulati	working environment in line with ions. (BL4-Analyze)										
Course Elements	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics × Gender × Human Values × Environment ×	SDG1(No poverty) SDG3(Good health and well-being)											

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	-	-	-	-	1	1	-	3	1	3	3	1	1
CO2	3	3	2	1	1	-	-	-	-	2	-	2	3	1	1
CO3	1	1	3	3	2	2	1	-	-	-	1	1	3	1	1
CO4	3	1	-	-	-	2	2	1	-	-	2	-	3	3	3
CO5	1	2	-	-	-	-	1	1	-	3	1	3	3	3	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Introduction to Good Labo	troduction to Good Laboratory practices										
Course Code	SEC VI (T)											
	SOPs and calibration proce CO2- to gain the knowledg followed in laboratory. (BL CO3- To provide the stude laboratory standard practic (BL3-Apply) CO4- To apply the subject laboratory accessories and CO5- To evaluate the theo	edure of differe le of the variou 2-Understand) nts a specialize es, their record knowledge in r d equipment's(I retical knowled	ed knowledge about implementation of ds and analyze laboratory data with accuracy. minimization of errors related with handling of									
Course Elements	Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment X	SDG (Goale)	SDG1(No poverty) SDG2(Zero hunger) SDG3(Good health and well-being) SDG6(Clean water and sanitation) SDG12(Responsible consuption and production)									

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1	1	1	1	1	1	-	1	1	1	-	1	1	1
CO2	2	2	1	1	1	1	1	1	-	1	-	-	2	1	1
CO3	2	2	1	2	1	2	-	-	1	1	-	-	2	1	2
CO4	2	3	2	2	1	2	1	1	-	1	1	-	3	2	2
CO5	3	3	2	2	1	2	-	1	1	1	1	-	3	2	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Molecular Diagnostics	Iolecular Diagnostics											
Course Code	DSE IV (T)												
Course Outcomes & Bloom's Level	testing in the field of molecu CO2- Demonstrate an unde Understand) CO3- Demonstrate an unde fragments() CO4- Apply molecular diagr diseases(BL3-Apply)	lar diagnostics.(rstanding of bas rstanding of electroniques	and clinical significance of laboratory (BL1-Remember) sic molecular diagnostic techniques(BL2- ctrophoresis in the separation of DNA s to the identification and diagnosis of rol and quality assurance(BL2-Understand)										
Course Elements	Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values ✓ Environment X	Skill Development ✓ Entrepreneurship × Employability ✓ Professional Ethics × Gender × Human Values ✓											

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	1	1	-	1	-	-	-	-	-	-	3	3	1
CO2	1	3	2	2	1	3	-	-	-	-	-	-	2	2	1
CO3	1	1	2	-	1	3	-	-	-	-	-	-	2	2	1
CO4	2	1	2	1	3	1	-	-	-	-	-	-	2	1	3
CO5	1	1	-	1	1	1	-	-	-	-	-	-	1	1	1
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Frontiers in Biotechnology & Micr	robiology									
Course Code	DSE IV (T)										
Course Outcomes & Bloom's Level	CO1- To understand the strategies (BL2-Understand) CO2- To understand and apply the bioinsecticides for crop improvem CO3- To analyze the gene behavi medicine.(BL4-Analyze) CO4- To identify the genetic and i tools.(BL1-Remember) CO5- To develop an improved & e based drug designing for the treat	e working principle nent. (BL3-Apply) ior and genetic mod infectious diseases efficient drug using	es of biofertilizers and difications in the field of health and using various biotechnological homology modelling & structure-								
	Skill Development ✓ Entrepreneurship X Employability X Professional Ethics X Gender X Human Values X Environment X	Entrepreneurship X Employability X Professional Ethics X Gender X Human Values X									

							-								
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	1	2	1	2	-	-	-	-	-	-	1	2	2
CO2	3	2	2	2	2	-	2	-	-	-	-	-	2	2	2
CO3	2	1	3	2	2	1	1	-	-	-	-	-	3	2	3
CO4	1	1	2	2	1	2	2	-	-	-	-	-	3	1	3
CO5	2	-	1	-	2	2	2	-	-	-	-	-	2	3	2
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Organic Mechanisms in Biology	rganic Mechanisms in Biology											
Course Code	DSE III (T)												
	CO1- To describe the concept of Remember) CO2- Understandabout the metal Understand) CO3- To understandthe important sciences(BL3-Apply) CO4- To provideexperimentalbas and toxicology(BL4-Analyze) CO5- Toevaluatetheapplicationso invariousfieldssuchasresearch an CO6- Toapply theunderstanding of Create)	bolism of biomolect ceofmetabolism in is andtoenablestud fbiological mechan iddevelopment. (BL	ules and toxicology (BL2- lifeanditsapplications in other lentstobasic concept of metabolism ism and toxicology .5-Evaluate)										
Course Elements	Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment X	SDG (Goals)	SDG4(Quality education)										

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	3	1	2	2	-	-	-	-	-	-	-	1	2	3
CO2	2	3	1	2	2	-	-	-	-	-	-	-	2	2	3
CO3	2	2	2	1	1	-	-	-	-	-	-	-	2	1	3
CO4	1	2	2	1	1	-	-	-	-	-	-	-	1	1	2
CO5	1	2	1	1	2	-	-	-	-	-	-	-	1	1	2
CO6	2	1	-	1	1	-	-	-	-	-	-	-	-	1	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Waste Management	aste Management											
Course Code	DSE III (T)												
	to waste disposal.(BL1-Rememb CO2- Develop understanding on waste and their disposals in vario CO3- Acquire knowledge on wast sustainable development.(BL2-U CO4- Apply basic concepts in haz management for urban areas(B	er) various technologic us ways.(BL2-Und te to energy produc nderstand) zardous waste mar L3-Apply) ste characterization	lerstand) ctions in the perspectives of										
Course Elements	Skill Development ✓ Entrepreneurship X Employability X Professional Ethics X Gender X Human Values X Environment √	SDG (Goals)	SDG4(Quality education)										

		1	1							1			1		· · · · · · · · · · · · · · · · · · ·
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	2	2	-	-	-	2	-	-	1	-	1
CO2	2	3	2	2	2	2	-	-	-	2	-	-	1	-	3
CO3	3	1	1	-	1	-	-	-	-	-	-	-	3	2	3
CO4	3	2	-	2	1	-	-	-	-	-	-	_	2	3	3
CO5	-	-	1	-	2	-	-	-	-	-	-	_	-	1	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Agricutlure Microbiology									
Course Code	DSE II (T)									
	CO1- TO Understand and accurately apply terminology used in the field of microbiology, and understand the fundamental differences between different types of microorganisms including bacteria, viruses, fungi, prions and protozoa(BL1- Remember) CO2- Describe the structure and biology of bacterial cells, including the arrangement and replication of genetic material, and understand the concept of virulence and virulence factors(BL2-Understand) CO3- To analyse how microorganisms may be detected within various environments, including how they may be cultivated within the laboratory setting, and molecular methods of detection(BL3-Apply) CO4- To identify specific microorganisms important to animals, plants and soil ecosystems, and explain why these microorganisms are significant(BL4-Analyze) CO5- Review and evaluate readings relating to microbiology and agricultural production(BL5-Evaluate)									
Course Elements	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics X Gender X Human Values √ Environment √	SDG (Goals)	SDG4(Quality education)							

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	2	-	-	2	-	-	-	2	2	-	2	2	3
CO2	2	1	2	-	-	3	-	-	-	2	1	-	1	2	2
CO3	2	2	2	-	-	1	-	-	-	1	1	-	1	1	2
CO4	1	2	1	-	-	2	-	-	-	1	2	-	3	1	1
CO5	2	2	1	-	-	1	-	-	-	1	-	-	3	2	1
CO6	2	2	3	-	-	3	-	-	-	-	2	-	2	1	1



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Agriculture Biotechnology and	griculture Biotechnology and Intellectual property rights											
Course Code	DSE II (T)												
Course Outcomes & Bloom's Level	Remember) CO2- To understand the techni engineering practice in agricult CO3- To define the concept of of biofertilizers(BL2-Understan CO4- To apply the knowledge of living entities for societal welfan CO5- The students will be able	ques, skills, and ure biotechnolog utilizing plants for nd) of engineering pri re(BL3-Apply) to develop the re	re and agricultural biotechnology (BL1- modern engineering tools necessary for y (BL2-Understand) r production of vaccines and production nciples of agriculture biotechnology to elationship between science and iotechnological manipulation of plants										
Course Elements	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics × Gender × Human Values ✓ Environment ✓												

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2	2	1	2	-	-	-	-	-	1	2	3	2
CO2	1	-	2	3	-	3	2	-	-	-	-	-	1	2	2
CO3	1	3	1	3	1	1	1	1	-	-	-	-	-	1	2
CO4	2	1	2	2	1	-	2	-	-	-	-	-	2	2	1
CO5	2	3	1	2	2	2	1	-	-	-	-	-	3	2	1
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Microbial Genetics		
Course Code	BSMB 701 (T)		
	CO1- The student will deepen the evolution.(BL1-Remember) CO2- The student will understand changes affect the expression of g phenotypes(BL2-Understand) CO3- The student will understand natural selection, leading to chang population and pangenome level.(CO4- The student will become fan study of microbial genetics, includi (whole genome sequencing, meta analyses.(BL3-Apply) CO5- learning opportunities in the infectious disease. (BL2-Understa	how genetic divers jenes, resulting in v how phenotypic ar jes in gene and gen BL2-Understand) niliar with common ing experimental ev genomics, transcrip basic principles of	sity is generated and how genetic variation in microbial and genetic variation is altered by notype frequencies at the research methods used for the volution, sequencing techniques ptomics) and comparative
Course Elements	Skill Development X Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment X	SDG (Goals)	SDG4(Quality education)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	1	1	2	2	-	-	-	-	-	-	2	2	1
CO2	2	1	3	2	1	2	1	-	-	-	-	-	1	1	1
CO3	1	1	3	1	1	2	3	-	-	-	-	-	1	1	1
CO4	1	2	1	2	2	1	3	-	-	-	-	-	3	2	3
CO5	2	2	1	1	3	1	-	-	-	-	-	-	2	2	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Research Methodology		
Course Code	BSMB 702 (T)		
Course Outcomes & Bloom's Level	CO1- The course prepares the stu Methodology, its applications in ex Remember) CO2- The subject Research Metho Biotechnology for describing the b subject along with its applications CO3- The course aims to provide acquire a specialized knowledge a experimental verification(BL3-App CO4- The course aims to provide Methodology in various fields of re CO5- The course aims to provide and use of statistical tools in research	perimental design odology is designe asic concepts of ea in other fields. (BL2 experimental basis and understanding bly) basis of analyzing esearch and industi basis of experimer	and future prospects. (BL1- d for post graduate students of ach and every division of the 2-Understand) s, and to enable students to of data and its applications in the applications of Research ries. (BL3-Apply) ntal design, computer applications
Course Elements	Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment X	SDG (Goals)	SDG4(Quality education)

COs	P01	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1	-	-	-	-	-	-	1	2	-	-	-	-	-
CO2	1	2	-	-	-	-	-	-	1	1	-	-	-	-	-
CO3	1	2	-	-	-	-	-	-	1	2	-	-	-	-	-
CO4	1	2	-	-	-	-	-	-	1	1	-	-	-	-	-
CO5	1	2	-	-	-	-	-	-	1	1	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Industrial Microbiology	ndustrial Microbiology											
Course Code	DSE VI (T)												
	microorganisms (BL2-Unde CO3- Discuss the methods different microorganisms (B CO4- Describe the environ various metabolites(BL3-A	ermentation strater erstand) for the production BL3-Apply) mental and nutrion oply)	enters (BL1-Remember) tegies and the growth kinetics of industrial on of certain products (metabolites) using tional factors affecting the production of zation protocol needed for various microbial										
Course Elements	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics X Gender X Human Values ✓ Environment ✓	SDG (Goals)	SDG4(Quality education) SDG8(Decent work and economic growth)										

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	-	1	1	3	1	-	-	-	-	-	1	2	1
CO2	1	1	1	3	3	2	-	-	-	-	-	-	2	3	-
CO3	3	2	3	-	3	-	1	-	-	-	-	-	3	1	3
CO4	3	2	3	2	2	3	2	-	-	-	-	-	1	2	3
CO5	3	3	3	2	3	2	2	-	-	-	-	-	2	3	2
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Industrial Biotechnology		
Course Code	DSE VI (T)		
Course Outcomes & Bloom's Level	microbiology and infectious dise CO2- It covers mechanisms of i practice, and the role of the hun CO3- It also provides opportunit including the use and interpreta diseases. (BL3-Apply) CO4- To understand the importa respect to infections of the resp soft tissue.(BL3-Apply) CO5- Helps to understand the u of microorganisms control, e.g.,	ease. (BL1-Reme nfectious disease nan body's norma ties to develop in tion of laboratory ance of pathogen iratory tract, gast use of lab animals chemotherapy & ecall the relation	e transmission, principles of aseptic al microflora. (BL2-Understand) formatics and diagnostic skills, tests in the diagnosis of infectious ic bacteria in human disease with rointestinal tract, urinary tract, skin and s in medical field. Explain the methods vaccines. Solve problems in the ship of this infection to symptoms,
Course Elements	Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values ✓ Environment ✓		SDG3(Good health and well-being) SDG4(Quality education)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	2	2	1	3	-	-	-	-	-	-	1	3	2
CO2	1	2	1	-	1	3	-	-	-	-	-	-	2	2	1
CO3	3	3	3	3	3	-	3	-	-	-	-	-	3	1	3
CO4	1	2	1	1	1	3	3	-	-	-	-	-	3	2	1
CO5	3	2	2	2	3	3	-	-	-	-	-	-	1	2	2
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Medical Microbiology		
Course Code	DSE V (T)		
	microbiology and infectious dise CO2- It covers mechanisms of i practice, and the role of the hun CO3- It also provides opportunit including the use and interpreta diseases. (BL3-Apply) CO4- To understand the importa respect to infections of the resp soft tissue.(BL3-Apply) CO5- Helps to understand the u of microorganisms control, e.g.,	ease. (BL1-Reme nfectious disease nan body's norma ties to develop in tion of laboratory ance of pathogen iratory tract, gast use of lab animals chemotherapy & ecall the relation	e transmission, principles of aseptic al microflora. (BL2-Understand) formatics and diagnostic skills, tests in the diagnosis of infectious ic bacteria in human disease with rointestinal tract, urinary tract, skin and s in medical field. Explain the methods vaccines. Solve problems in the ship of this infection to symptoms,
Course Elements	Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values ✓ Environment ✓		SDG3(Good health and well-being) SDG4(Quality education)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	2	2	1	3	-	-	-	-	-	-	1	3	2
CO2	1	2	1	-	1	3	-	-	-	-	-	-	2	2	1
CO3	3	3	3	3	3	-	3	-	-	-	-	-	3	1	3
CO4	1	2	1	1	1	3	3	-	-	-	-	-	3	2	1
CO5	3	2	2	2	3	3	-	-	-	-	-	-	1	2	2
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Medical Biotechnology									
Course Code	DSE V (T)									
Course Outcomes & Bloom's Level	Remember) CO2- To understand the role o Understand) CO3- To learn about biosenso nanotechnology and its applic CO4- The students will be abl	O2- To understand the role of biotechnology in the world wide market(BL2-								
Course Elements	Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values ✓ Environment X		SDG3(Good health and well-being) SDG4(Quality education)							

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	2	1	1	-	-	-	-	-	-	-	1	2	1
CO2	2	2	2	2	3	1	2	-	-	-	-	-	2	1	2
CO3	3	1	1	2	2	-	2	-	-	-	-	-	2	1	2
CO4	2	1	1	2	1	3	1	-	-	-	-	-	1	1	1
CO5	1	2	2	1	1	-	1	-	-	-	-	-	1	3	2
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Microbial Quality Control ir	icrobial Quality Control in Food and Pharmaceutical Industries										
Course Code	BSMB 801 (T)	SMB 801 (T)										
Course Outcomes & Bloom's Level	their significance. (BL1-Ren CO2- To understand Basic CO3- To Design SOPs and	 D1- Students will gain knowledge about the different types of microorganisms and eir significance.(BL1-Remember) D2- To understand Basic concept of microbiological quality control(BL2-Understand) D3- To Design SOPs and related laboratory infrastructure(BL3-Apply) D4- To Conduct microbiological quality control(BL3-Apply) 										
	Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values ✓ Environment ✓	SDG (Goals)	SDG3(Good health and well-being) SDG4(Quality education) SDG8(Decent work and economic growth)									

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2	-	-	2	2	-	-	-	-	-	1	2	2
CO2	1	2	3	2	2	1	-	-	-	-	-	-	2	2	1
CO3	1	1	1	1	2	1	1	-	-	-	-	-	-	-	1
CO4	2	-	1	1	1	1	-	-	-	-	-	-	1	1	3
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Human Health and Vaccino	ology									
Course Code	EC VII (T)										
Course Outcomes & Bloom's Level	Remember) CO2- To understand basic of (BL2-Understand) CO3- To remember about the preventions and their interation CO4- The course aims to prevention a specialized knowl CO5- To apply the understate various Biological Samples vaccines, edible vaccines, r	concepts of Hu ne various dise ction with hum rovide experim ledge and unde inding of Huma for the develop nanoparticles ir	ental basis, and to enable students to								
Course Elements	Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment X	SDG (Goals)	SDG3(Good health and well-being) SDG4(Quality education) SDG12(Responsible consuption and production)								

	_	_	_								-		-	-	
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2	2	1	-	-	-	-	-	-	-	1	-	2
CO2	1	3	-	1	-	1	1	-	-	-	-	-	2	1	2
CO3	1	1	1	2	1	2	1	-	-	-	-	-	2	1	1
CO4	2	1	1	2	2	1	-	-	-	-	-	-	3	1	-
CO5	2	1	2	2	2	1	1	-	-	-	-	-	1	-	1
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Pharmaceutical Biotechno	ology									
Course Code	DSE VII (T)										
	(BL1-Remember) CO2- Understanding the in Industries(BL2-Understan CO3- To apply Genetic en pharmaceuticals(BL3-App CO4- To understand the In	CO2- Understanding the importance of Immobilized enzymes in Pharmaceutical industries (BL2-Understand) CO3- To apply Genetic engineering applications in relation to production of harmaceuticals (BL3-Apply) CO4- To understand the Importance of Monoclonal antibodies in Industries (BL3-Apply) CO5- To apply and anlayze the Appreciate the use of microorganisms in fermentation									
	Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values ✓ Environment ✓	SDG (Goale)	SDG3(Good health and well-being) SDG4(Quality education) SDG8(Decent work and economic growth) SDG9(Industry Innovation and Infrastructure)								

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	2	2	1	1	-	-	-	-	-	-	1	1	2
CO2	2	2	1	1	2	-	1	-	-	-	-	-	2	2	3
CO3	2	1	2	3	2	1	2	-	-	-	-	-	2	3	1
CO4	3	1	3	3	1	1	1	-	-	-	-	-	3	3	1
CO5	1	1	3	1	3	2	-	-	-	-	-	-	2	3	2
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Food and Dairy Microbiology		
Course Code	DSE VII (T)		
Course Outcomes & Bloom's Level	CO1- Explain the interactions bet factors influencing their growth an CO2- Explain the significance and Understand) CO3- Describe the characteristics microorganisms, and methods for Apply) CO4- Explain why microbiologica production.(BL3-Apply) CO5- Explain the effects of ferme microbiological quality and status	nd survival. (BL1-Re d activities of micro s of foodborne, wate their isolation, det l quality control pro ntation in food proc	organisms in food. (BL2- erborne and spoilage ection and identification. (BL3- grammes are necessary in food duction and how it influences the
Course Elements	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics X Gender X Human Values ✓ Environment ✓	SDG (Goals)	SDG4(Quality education)

-															
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	1	2	2	1	-	-	-	-	-	2	3	1	2
CO2	2	2	1	3	1	3	2	-	-	-	-	2	1	2	1
CO3	1	1	2	2	2	1	2	3	-	-	-	1	3	3	2
CO4	3	2	3	3	1	1	3	2	-	-	-	1	2	3	1
CO5	2	3	3	2	3	2	1	2	-	-	-	3	1	2	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-