BIOSCIENCES-BIOCHEMISTRY

PROGRAMME OUTCOMES

PO-1: **Skill Development**: Master academic, technical, managerial and crucial soft skills to qualify for careers in research, industry, education, administration and management or for higher studies where a holistic understanding of applied biosciences is required.

PO-2: Research: Develop a scientific mindset with the capacity for analytical and innovative thinking and practical knowhow to formulate, design and ethically implement scientific research in frontier areas of Biochemistry, Biotechnology and Microbiology

PO-3: Communication: Acquire effective communication and creative expression skills in the form of writing, design, presentation and networking to convincingly articulate scientific ideas in biosciences and related fields

PO-4: **Employment and Entrepreneurship:** Acquire the necessary knowledge and proficiencies to become employable or get self-employed and thereby create job opportunities through entrepreneurship in heath, agriculture, industry, environment and allied areas of applied biosciences and thereby affirmatively contribute to scientific social responsibility.

PROGRAMME SPECIFIC OUTCOMES

PSO1: Confidence: Demonstrate a comprehensive understanding of chemical and biological structure, principles, techniques, and applications

PSO2: Knowledge based Skill: To develop better understanding and improve skills that would enable them to begin a career in research laboratories, industries as well as to generate self-employability

PSO3: Scientific Social Responsibility: To develop linkages between scientific community and society to build trust, partnership and responsibility of science towards achieving social goals

PSO4: Research and analysis: Realize the impact of science in society and plan to pursue research, and learn to work as a team as well as independently to retrieve information, carry out research investigations and result interpretations

PSO5: Diagnostic skills: Attain a remarkable understanding of biochemical principles of bioenergetics, metabolism, physiology and disorders through diagnostic laboratory procedures.

PSO6: Technical and analytical skills: Acquire a thorough knowledge on omics biology, high-throughput omics approaches to analyse biological samples such as genomics, transcriptomics, proteomics, metabolomics and comprehensive analysis approach.

COURSE STRUCTURE-BIOCHEMISTRY

SEMESTER-I

Type	Course code	Course Name	Credits
Theory	BCFB001	Fundamentals of Biochemistry	4
	BTTE0009	Thermodynamics and Enzymology	3
	MBCG0011	Cell Biology and Genetics	4
	BCAT0014	Analytical Techniques	4
Lab	BCFB6009	Fundamentals of Biochemistry Lab	1
	BTTE6009	Thermodynamics and Enzymology Lab	1
	BCAT6010	Analytical Techniques Lab	1
	MBCB6011	Cell Biology and Genetics Lab	1
	BCRT6012	Remedial Teaching & NET Coaching course	NC
	BTIV6011	Industrial/ Laboratory visit	1
	MBNT6013	NPTEL Course	NC
Total credits			**20**

SEMESTER-II

Type	Course code	Course Name	Credits
Theory	BCMB0015	Molecular Biology	4
	BTGE0005	Genetic Engineering	3
	BTCA0010	Computer Applications and Bioinformatics	3
	BCFI0016	Fundamentals of Immunology	4
	MBBM0014	Basic Microbiology	2
Lab	BCMB6013	Molecular Biology Lab	1
	BTGE6004	Genetic Engineering Lab	1
	BTCA6010	Computer Applications and Bioinformatics Lab	2
	BCFI6014	Fundamentals of Immunology Lab	1
	MBBM6012	Basic Microbiology Lab	1
	Skill Development Courses (*any 1*)		
	BTFF0013	Fermentation and food microbiology	1
	BCHD0017	Herbal Drug Technology	
	MBWM0012	Waste Management	
	MBMC0013	Mushroom cultivation	
	BCRT6012	Remedial Teaching & NET Coaching	
	MBIT6014	Internships/Summer Training	
Total Credits			**23**

SEMESTER -III

Type	Course code	Course Name	Credits
Theory	BTRM0003	Research Methodology & Biostatistics-**common**	4
	BCPY0011	Physiology	3
	BCMB0010	Medical Biochemistry	3
	BC	Bioenergetics	3
	BC	Nutritional Biochemistry &Metabolism	3
Lab	BCPY6005	Physiology Lab	1
	BCIM6004	Medical Biochemistry Lab	1
	BCBM6006	Bioenergetics Lab	1
	BC	Nutritional Biochemistry &Metabolism Lab	1
	BCDI6007	Dissertation Phase I	2
	BT	IPR &Entrepreneurship	1
	BCSL0200	Service Learning- Value added course	1
	BC	Journal Club and scientific communications	1
	BCRT6015	Remedial Teaching & NET Coaching	NC
	Total Credits		**25**

SEMESTER -IV

Type	Course code	Course Name	Credits
Theory	BC	Omics Biology and its Tools	4
Elective Courses (*any 1*)			
	MB	Agriculture Technology	2
	BT	Nanobiology	
	BC	Bioresource Management	
Lab	BCDI6008	Dissertation Phase II	16
	Total Credits		**22**

BIOCHEMISTRY-MAPPING

Courses	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
Fundamentals of Biochemistry	H	M	H	H	H	H	L	H	M	L
Thermodynamics and Enzymology	H	H	L	M	H	M	L	M		
Cell Biology and Genetics	H	H	H	M	H	M	L	M	L	L
Analytical Techniques	H	H	M	H	H	H	M	H	L	L
Lab I- Fundamentals of Biochemistry	H	H	M	M	H	H	L	H	M	L
Lab II- Thermodynamics and Enzymology	H	H	M	M	H	M		M		
Lab III- Cell Biology and Genetics	H	H	H	M	H	H	L	H	M	L
Lab IV- Analytical Techniques	H	H	M	H	H	H	M	H	L	L
Industrial/ Laboratory visit	H	H		H	M	H		H	M	H
Molecular Biology	H	M	M	M	M	H	L	M	L	L
Genetic Engineering	H	H	L	M	M	H	M	M		L
Computer Applications and Bioinformatics	H	H	M	M	M	H	L	M		H
Fundamentals of Immunology	H	H	H	H	M	H	H	M	L	L
Basic Microbiology	L	H	L	L		H		L		
Lab I- Molecular Biology	H	H	M	M	M	H	L	H	L	L
Lab II- Genetic Engineering	H	H	M	M	M	H	M	M		M
Lab III- Computer Applications and Bioinformatics	H	L	M	M		H		H		H
Lab IV- Fundamentals of Immunology	H	H	H	H	M	H	L	M	L	L
Lab V- Basic Microbiology	H	H	H	H		H		L		
Fermentation and Food Micorbiology (Skill Development course)	H	H	H	H	M	H	H	L	H	L
Herbal Drug Technology (Skill Development course)	H	H	M	H	L	H	H	H	L	M
Waste Management (Skill Development course)	H	H	M	H	M	H	H	H	L	M
Mushroom Cultivation (Skill Development course)	H	H	H	H	H	H	H	H	L	H
Physiology	H	M	M	M	M	M	L	M	H	L
Medical Biochemistry	H	H	M	H	H	H	H	H	H	L

Bioenergetics	M	H		L	H	M	L	H		M
Nutritional Biochemistry &Metabolism	H	H	M	H	M	M	M	H	H	L
Lab I- Physiology	H	M	L	M	M	M	L	M	H	L
Lab II-Medical Biochemistry	M	H	M	H	H	H	H	H	H	L
Lab III-Bioenergetics	M	H	L		H	M	L			
Lab-IV- Nutritional Biochemistry &Metabolism	H	H	M	H	M	M	M	H	H	L
Research Methodology & Biostatistics-common	M	H	H	M	L	M	H	H	L	L
Dissertation Phase I	H	H	H	H	H	H	H	H		
IPR &Entrepreneurship	M	H	H	H	M	H	M	M	L	L
Journal Club and scientific communications		H	H		H			H		M
Service Learning	M		H	M		M	H	L		
Omics Biology and its Tools	H	H	H	H	H	H	H	H	M	H
Agriculture Technology (Elective)	H	M	M	H	H	H	H	M	M	M
Nanobiology (Elective)	M	H	M	L	H		M			
Bioresource Management (Elective)	H	M	L	M	L	M	M	H	L	L
Dissertation Phase II	H	H	H	H	H	H	H	H	H	H