Bhavan's Vivekananda College

of Science, Humanities and Commerce
Sainikpuri, Secunderabad, Telangana – 500094
Autonomous College – Affiliated to Osmania University
Reaccredited with 'A' Grade by NAAC

M. Sc Biochemistry

Program Outcomes:

PO1: Knowledge: Apply the knowledge of basic concepts, fundamental principles and scientific theories and processes related to the fields of life sciences with their relevance in day-to-day life.

PO2: Analytical Skills: Select and implement the analytical skills acquired, in design of experiments followed by its effective execution in scientific research, industry and entrepreneurship.

PO3: Investigations and Problem analysis: Identify and investigate socially relevant issues using knowledge of Science and technology by design of experiments, analysis, interpretation of data and provide valid conclusions.

PO4: Design and development of solutions: Design innovative solutions for various societal needs like health care, food, water and energy through research and development with appropriate consideration for cultural, societal, environmental, public health and safety.

PO5: Communication: Communicate effectively on problems, issues and solutions with community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO6: Ethics & Environment: Apply ethical principles and commit to professional ethics and responsibilities and norms in research and the functional areas, understand the issues of environmental context and sustainable development.

PO7: Individual and Team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO8: Self-directed and Life-long Learning: Acquire the ability to engage in independent and life-long learning in the broadest context of socio, economic and technological changes.

Program Specific Outcomes:

PSO1: Implement the knowledge of Biomolecules, Enzymes, Bioenergetics, Bioanalytical techniques, Microbiology and Biotechnology to formulate procedures and implement in research and industries.

PSO2: Apply the concepts of Clinical biochemistry, Immunology, Physiology, Endocrinology and Cell signaling to devise new protocols and develop health care products in clinical and immunodiagnostics.

PSO3: Integrate the knowledge of Molecular Biology, Gene regulation and Computational Biology to address real life problems.

Course Outcomes:

Name of the Course	CHEMISTRY AND METABOLISM OF PROTEINS, LIPIDS & PORPHYRINS
Course Code	**BI101T**
CO1	Relate structural organization of proteins with their properties and functions.
CO2	Correlate the genetic defects with impaired amino acid metabolism.
CO3	Associate the different classes of lipids with their tissue distribution.
CO4	Relate the genetic defects with altered lipid metabolism.

Name of the Course	CHEMISTRY, METABOLISM OF CARBOHYDRATES, VITAMINS AND NUCLEIC ACIDS
Course Code	**BI102T**
CO1	Differentiate the structural features and properties of various carbohydrates.
CO2	Relate various metabolic events of carbohydrates and their significance.
CO3	Distinguish the structural features, properties and metabolism of nucleic acids.
CO4	Implement the importance of vitamins in daily health.

Name of the Course	BIO-ANALYTICAL TECHNIQUES
Course Code	**BI103T**
CO1	Apply relevant spectroscopic method in study of molecular mass and structure of biomolecules.
CO2	Analyse various biomolecules based on their physical and chemical properties by different chromatographic methods.
CO3	Design protocol for separating and identifying proteins or nucleic acids using centrifugation and electrophoresis methods.
CO4	Interpret the use of specific isotope for a particular study.

Name of the Course	BIOENERGETICS AND PHOTOSYNTHESIS
Course Code	**BI104T**
CO1	Relate the concepts of Thermodynamics to biological oxidation and energy production.
CO2	Differentiate the structural organization of various bio membranes.
CO3	Relate different membrane transport mechanisms with their functions.
CO4	Distinguish the different pathways of photosynthesis and their regulation.

Name of the Course	AMINO ACID AND PROTEIN ANALYSIS
Course Code	**BI151P**
CO1	Implement the knowledge of good laboratory practices and instrumentation in research Industry.
CO2	Select suitable buffers for biochemical experiments.
CO3	Analyse amino acids and proteins qualitatively and quantitatively in research methodology/industries.
CO4	Apply different techniques for analysis of amino acids and proteins in

	biological samples.
Name of the Course	**CARBOHYDRATE AND LIPID ANALYSIS**
Course Code	**BI152P**
CO1	Apply the knowledge of qualitative and quantitative analysis of carbohydrates from various samples in research/industry.
CO2	Apply the knowledge of qualitative and quantitative analysis of lipids from various samples in research/industry.
CO3	Categorize the fats and oils in food samples based on their various properties and apply it in food industries.
CO4	Analyse the concentrations of vitamins, minerals and metals in various samples in research/ food industry.

Name of the Course	**ENZYMOLOGY**
Course Code	**BI201T**
CO1	Interpret the concepts of enzyme catalysis.
CO2	Differentiate kinetic behavior of single and bi-substrate reactions, in presence and absence of inhibitors
CO3	Demonstrate the knowledge of enzyme catalytic mechanisms in further research.
CO4	Value the importance of enzyme regulation in cellular homeostasis.

Name of the Course	**MOLECULAR BIOLOGY**
Course Code	**BI202T**
CO1	Differentiate between prokaryotic and eukaryotic DNA replication.
CO2	Use the concepts of DNA repair mechanisms to maintain genetic stability.
CO3	Compare the role of proteins involved in prokaryotic and eukaryotic transcription.
CO4	Distinguish the different types of translation and translational systems.

Name of the Course	**BIOCHEMICAL GENETICS AND MODEL ORGANISMS**
Course Code	**BI203T**
CO1	Interpret the chemical basis of heredity and the importance of mutations.
CO2	Demonstrate the concept of linkage and mapping genes by pedigree analysis.
CO3	Predict bacterial gene mapping to different gene transfer mechanisms.
CO4	Relate the biological processes of a model organism to higher organisms.

Name of the Course	**BIOSTATISTICS AND CLINICAL BIOCHEMISTRY**
Course Code	**BI204T**
CO1	Use and interpret results of statistical analysis.
CO2	Categorize and examine samples for normal and abnormal values.
CO3	Analyze the underlying biochemical defect in various disease conditions.
CO4	Determine the role and importance of molecular diagnostics.

Name of the Course	**ENZYMOLOGY AND BIOCHEMICAL PREPARATIONS**
Course Code	**BI251P**
CO1	Choose appropriate methods for isolation of proteins from biological samples and apply knowledge in research/industries.
CO2	Distinguish the different isolation procedures for carbohydrates and lipids.
CO3	Select suitable assay method for specific enzyme in biological sample.
CO4	Determine optimal conditions and various factors influencing the enzyme activity and apply in research/ industry.

Name of the Course	**MOLECULAR BIOLOGY, GENETICS AND CLINICAL BIOCHEMISTRY**
Course Code	**BI252P**
CO1	Identify and analyse nucleic acids qualitatively and quantitatively in molecular biology/ biotech labs or industry.
CO2	Solve problems on monohybrid and dihybrid crosses to understand the inheritance of traits in plant breeding.
CO3	Utilize the quantitative methods of blood and urine analysis in diagnostic labs and correlate the results of biochemical investigations with the general health profile.
CO4	Interpret the diagnostic results of serum enzyme assays with health and disease.

Name of the Course	**GENE REGULATION AND GENETIC ENGINEERING**
Course Code	**BI301T**
CO1	Illustrate various regulatory strategies employed in prokaryotic systems.
CO2	Compare various concepts of eukaryotic gene regulation.
CO3	Apply the knowledge to construct genomic libraries and screening methods in biotech projects and companies
CO4	Apply genetic engineering methods in expression of heterologous proteins and in genetic profiling.

Name of the Course	**IMMUNOLOGY AND IMMUNOTECHNOLOGY**
Course Code	**BI302T**
CO1	Identify the components of immune system
CO2	Interpre**t** cellular processes involved in transplantation and tumor formation.
CO3	Interpret the causes of hypersensitive reaction and response to immunosuppressive drugs.
CO4	Apply the principles of antigen-antibody interactions in immunological methods including diagnostics and also provides awareness on significance of vaccination.

Name of the Course	**CELL SIGNALING, DIFFERENTIATION AND METHODS OF CELL STUDY**
Course Code	**BI303B**
CO1	Interpret the structural organization of different cell types.

CO2	Identify suitable methods to study cells.
CO3	Interpret the different cellular signaling pathways
CO4	Correlate the role of growth factors in cell differentiation.

Name of the Course	**MICROBIOLOGY**
Course Code	**BI304T**
CO1	Categorize the bacteria and identify appropriate bacterial culturing methods.
CO2	Categorize the viruses and identify suitable purification and assay methods for isolation of viruses.

Name of the Course	**RECOMBINANT DNA AND IMMUNOTECHNOLOGY**
Course Code	**BI 351P**
CO1	Apply the recombinant DNA tools for gene expression studies in research/biotech labs.
CO2	Make use of the purified IgG in various immunological applications in research/ industry.
CO3	Choose suitable immunodiffusion methods to study antigen antibody interactions.

Name of the Course	**CELL BIOLOGY AND MICROBIOLOGY**
Course Code	**BI352P**
CO1	Utilize cell fractionation methods to isolate specific organelles for further studies in research.
CO2	Employ the methods of isolation and identification of bacteria from various sources in biotech lab/ industry or in research.
CO3	Identify and characterize the bacteria, isolated from various samples.

Name of the Course	**PROJECT COURSE WORK**
Course Code	**BI353P**
CO1	Analyse and interpret the literature data for preparing project reports, scientific documents and for project proposals.
CO2	Implement the MS office tools to prepare scientific presentations, documents and project reports.

Name of the Course	**PHYSIOLOGY AND XENOBIOTICS**
Course Code	**BI401T**
CO1	Apply the understanding of the physiological process of neurotransmission.
CO2	Apply the knowledge of muscle physiology to muscle disorders.
CO3	Correlate the knowledge of the human reproductive system to fertility and pregnancy.
CO4	Apply the knowledge of liver detoxification to drug metabolism

Name of the Course	**BIOINFORMATICS**
Course Code	**BI402T**
CO1	Apply the tools of genomics to compare different genome sequences.
CO2	Determine the appropriate methods for transcriptome analysis.
CO3	Apply the knowledge of proteomics methods for proteome analysis.
CO4	Correlate the importance and relevance of synthetic genes.

Name of the Course	**BIOTECHNOLOGY**
Course Code	**BI403T**
CO1	Identify the various stages of downstream processing.
CO2	Apply genetic engineering methods to use plants as bioreactors.
CO3	Design protocols for the production of biotechnological products using animal systems.
CO4	Apply the knowledge of protein engineering in development of novel proteins or drugs.

Name of the Course	**ENDOCRINOLOGY AND METABOLIC DISORDERS**
Course Code	**BI404T**
CO1	Categorize the types of hormones and their physiology.
CO2	Analyze the process of endocrine regulation.
CO3	Interpret metabolic disorders associated with amino acid and carbohydrate metabolism.
CO4	Interpret metabolic disorders associated with lipid and nucleotide metabolism.

Name of the Course	**BIOINFORMATICS & ENDOCRINOLOGY**
Course Code	**BI451P**
CO1	Identify inheritance pattern in genetic disorders and compare the metabolic pathways in a cell/organism for further research analysis.
CO2	Analyse the similarities between sequences from different species using sequence alignment tools for phylogenetic tree construction
CO3	Identify suitable primers for amplification and restriction digestion sites for analysis of genes in research labs/ biotech company
CO4	Employ appropriate hormone assays to diagnose endocrine disorders in diagnostic labs.

Name of the Course	**PROJECT**
Course Code	**BI452P**
CO1	Choose the suitable project work and execute it effectively.
CO2	Interpret the results with scientific conclusion and present in seminars and conferences.

Course Matrix

Name of the Program: M. Sc Biochemistry											
Name of the Course: Chemistry and Metabolism of Proteins, Lipids and Porphyrins								**Course Code:BI101T**			
Semester: I								**Year: First Year**			
Academic Year:2020-21								**Batch:2020-22**			
	Program Outcomes								**Program Specific Outcomes**		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	2	3	1	1	3	3	3	2	2
CO2	3	1	2	3	2	2	1	2	3	3	1
CO3	3	2	2	3	2	2	2	2	3	2	1
CO4	3	3	3	3	2	2	2	2	3	3	1
BI101T	**3**	**2.25**	**2.25**	**3**	**1.75**	**1.75**	**2**	**2.25**	**3**	**2.5**	**1.25**

Name of the Program: M. Sc Biochemistry											
Name of the Course: Chemistry and Metabolism of Carbohydrates, Vitamins and Nucleic Acids								**Course Code:BI102T**			
Semester: I								**Year: First Year**			
Academic Year:2020-21								**Batch:2020-22**			
	Program Outcomes								**Program Specific Outcomes**		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	2	3	2	2	2	2	3	3	1
CO2	3	3	3	3	2	1	2	2	3	3	1
CO3	3	2	2	2	2	1	2	2	3	3	1
CO4	3	1	1	3	3	2	2	2	3	2	0
BI102T	**3**	**2.25**	**2**	**2.75**	**2.25**	**1.5**	**2**	**2**	**3**	**2.75**	**0.75**

Name of the Program: M. Sc Biochemistry											
Name of the Course: Bio-Analytical Techniques								**Course Code:BI103T**			
Semester: I								**Year: First Year**			
Academic Year:2020-21								**Batch:2020-22**			
	Program Outcomes								**Program Specific Outcomes**		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	3	2	1	2	3	3	2	0
CO2	3	3	3	3	2	1	3	3	3	1	0
CO3	3	3	3	3	2	1	3	3	3	1	0
CO4	3	2	2	2	2	2	2	2	1	0	0
BI103T	**3**	**2.75**	**2.75**	**2.75**	**2**	**1.25**	**2.5**	**2.75**	**2.5**	**1**	**0**

Name of the Program: M. Sc Biochemistry	
Name of the Course: Bioenergetics and Photosynthesis	**Course Code:BI104T**

Semester: I								**Year: First Year**		
Academic Year:2020-21								**Batch:2020-22**		
	Program Outcomes							**Program Specific Outcomes**		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	2	2	2	1	0	1	2	3	0	0
CO2	3	1	2	2	1	1	2	2	1	2	1
CO3	3	3	3	3	1	1	2	2	3	2	1
CO4	3	1	1	2	1	2	1	2	2	3	1
BI104T	**3**	**1.75**	**2**	**2.25**	**1**	**1**	**1.5**	**2**	**2.25**	**1.75**	**0.75**

Name of the Program: M. Sc Biochemistry											
Name of the Course: Amino acid and Protein analysis								**Course Code: BI151P**			
Semester: I								**Year: First year**			
Academic Year:2020-21								**Batch:2020-22**			
	Program Outcomes								**Program Specific Outcomes**		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	2	3	3	3	3	3	3	2	1
CO2	3	3	2	3	2	1	3	3	3	2	1
CO3	3	3	3	3	1	1	3	3	3	2	1
CO4	3	3	3	3	1	1	3	3	3	2	1
BI151P	**3**	**3**	**2.5**	**3**	**1.75**	**1.5**	**3**	**3**	**3**	**2**	**1**

Name of the Program: M. Sc Biochemistry											
Name of the Course: Carbohydrate and lipid analysis								**Course Code: BI152P**			
Semester: I								**Year: First year**			
Academic Year:2020-21								**Batch:2020-22**			
	Program Outcomes								**Program Specific Outcomes**		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	3	3	3	1	1
CO2	3	3	3	3	3	3	3	3	3	1	1
CO3	3	3	3	3	3	3	3	3	3	1	1
CO4	3	3	3	3	3	3	3	3	3	1	1
BI152P	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**1**	**1**

Name of the Program: M. Sc Biochemistry		
Name of the Course: Enzymology	**Course Code: BI201T**	
Semester: II	**Year: First Year**	
Academic Year:2020-21	**Batch:2020-22**	
	Program Outcomes	**Program Specific**

									Outcomes		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	3	2	1	2	2	3	3	2
CO2	3	3	3	3	2	2	2	3	3	2	2
CO3	3	3	3	3	2	2	2	2	3	2	2
CO4	3	3	3	3	2	2	2	2	3	2	2
BI201T	**3**	**3**	**3**	**3**	**2**	**1.75**	**2**	**2.25**	**3**	**2.25**	**2**

Name of the Program:M.Sc Biochemistry											
Name of the Course: Molecular biology							**Course Code:BI202T**				
Semester: II							**Year:First Year**				
Academic Year:2020-21							**Batch:2020-22**				
	Program Outcomes								**Program Specific Outcomes**		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	2	0	2	0	1	3	3	3
CO2	3	3	3	3	1	2	1	1	2	3	3
CO3	3	3	3	3	1	1	1	1	3	2	2
CO4	3	3	3	3	1	1	1	1	3	2	1
BI202T	**3**	**3**	**3**	**2.75**	**0.75**	**1.5**	**0.75**	**1**	**2.75**	**2.5**	**2.25**

Name of the Program: M. Sc Biochemistry											
Name of the Course: Biochemical Genetics and Model organisms								**Course Code:BI203T**			
Semester: II								**Year: First Year**			
Academic Year:2020-21								**Batch:2020-22**			
	Program Outcomes								**Program Specific Outcomes**		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	2	2	1	2	2	3	1	2
CO2	3	3	3	2	2	1	1	2	2	2	2
CO3	3	2	3	1	1	1	2	2	0	0	1
CO4	3	3	3	2	1	2	2	2	1	0	0
BI203T	**3**	**2.75**	**3**	**1.75**	**1.5**	**1.25**	**1.75**	**2**	**1.5**	**0.75**	**1.25**

Nameof the Program:M.Sc Biochemistry											
Name of the Course:Biostatistics and Clinical Biochemistry								**Course Code:BI204T**			
Semester: II								**Year:First Year**			
Academic Year:2020-21								**Batch:2020-22**			
	Program Outcomes								**Program Specific Outcomes**		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3

CO1	3	3	3	3	3	1	2	2	3	3	2
CO2	3	3	3	2	2	2	2	2	3	3	2
CO3	3	3	3	2	1	2	1	2	3	3	0
CO4	3	3	3	3	2	3	3	2	3	3	2
BI204T	**3**	**3**	**3**	**2.5**	**2**	**2**	**2**	**2**	**3**	**3**	**1.5**

Name of the Program: M. Sc Biochemistry											
Name of the Course: Enzymology and Biochemical preparations								**Course Code: BI251P**			
Semester: II								**Year: First year**			
Academic Year:2020-21								**Batch:2020-22**			
	Program Outcomes								**Program Specific Outcomes**		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	3	2	2	3	3	3	1	1
CO2	3	3	3	3	2	2	3	3	3	1	1
CO3	3	3	3	3	3	2	3	3	3	1	1
CO4	3	3	3	3	3	3	3	3	3	1	1
BI251P	**3**	**3**	**3**	**3**	**2.5**	**2.25**	**3**	**3**	**3**	**1**	**1**

Name of the Program: M. Sc Biochemistry											
Name of the Course: Molecular Biology, Genetics and Clinical Biochemistry								**Course Code: BI252P**			
Semester: II								**Year: First year**			
Academic Year:2020-21								**Batch:2020-22**			
	Program Outcomes								**Program Specific Outcomes**		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	1	1	1	3	1	3	3
CO3	3	3	3	3	3	3	3	3	1	3	3
CO4	3	3	3	3	3	3	3	3	1	3	3
BI 252P	**3**	**3**	**3**	**3**	**2.5**	**2.5**	**2.5**	**3**	**1.5**	**3**	**3**

Name of the Program: M. Sc Biochemistry											
Name of the Course: Gene regulation and Genetic Engineering								**Course Code:BI301T**			
Semester: III								**Year: Second year**			
Academic Year: 2021-22								**Batch:2020-22**			
	Program Outcomes								**Program Specific Outcomes**		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	2	3	1	1	1	1	1	3	2	1
CO2	3	3	2	3	1	1	1	1	3	2	1

CO3	3	3	3	3	1	1	1	1	3	1	1
CO4	3	3	3	3	1	1	1	1	3	1	1
BI301T	**3**	**2.75**	**2.75**	**2.5**	**1**	**1**	**1**	**1**	**3**	**1.5**	**1**

Name of the Program: M. Sc Biochemistry											
Name of the Course: Immunology and Immunotechnology								**Course Code:BI302T**			
Semester: III								**Year: Second year**			
Academic Year:2021-22								**Batch:2020-22**			
	Program Outcomes								**Program Specific Outcomes**		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	2	2	2	2	1	1	2	2	3	1
CO2	3	3	3	3	2	2	2	2	2	3	1
CO3	3	3	3	3	2	1	2	2	3	3	1
CO4	3	3	3	3	3	3	3	3	2	3	1
BI302T	**3**	**2.75**	**2.75**	**2.75**	**2.25**	**1.75**	**2**	**2.25**	**2.25**	**3**	**1**

Name of the Program: M. Sc Biochemistry											
Name of the Course: Cell signaling, Differentiation and Methods of cell study								**Course Code:BI303B**			
Semester: III								**Year: Second year**			
Academic Year:2021-22								**Batch:2020-22**			
	Program Outcomes								**Program Specific Outcomes**		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	2	1	1	0	2	2	1	3	1
CO2	3	3	3	1	1	1	3	2	3	3	2
CO3	3	3	3	3	2	1	3	2	2	3	1
CO4	3	3	3	3	2	1	2	2	3	3	2
BI303B	**3**	**3**	**2.75**	**2**	**1.5**	**0.75**	**2.5**	**2**	**2.25**	**3**	**1.5**

Name of the Program: M. Sc Biochemistry											
Name of the Course: Microbiology								**Course Code: BI 304T**			
Semester: IV								**Year: Second year**			
Academic Year:2021-22								**Batch:2020-22**			
	Program Outcomes								**Program Specific Outcomes**		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	1	1	2	1	1	1	1	3	1	1
CO2	3	1	2	2	1	1	1	1	3	2	2
BI 404T	**3**	**1**	**1.5**	**2**	**1**	**1**	**1**	**1**	**3**	**1.5**	**1.5**
Name of the Program: M. Sc Biochemistry											

Name of the Course: Recombinant DNA and Immunotechnology							Course Code: BI351P				
Semester: III							Year: Second year				
Academic Year: 2021-22							Batch: 2020-22				
	Program Outcomes								Program Specific Outcomes		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	3	1	3	3	3	1	3	3
CO2	3	3	3	3	1	3	3	3	1	3	3
CO3	3	3	3	3	1	3	3	3	1	3	3
BI351P	**3**	**3**	**3**	**3**	**1**	**3**	**3**	**3**	**1**	**3**	**3**

Name of the Program: M.Sc Biochemistry											
Name of the Course: Cell Biology and Microbiology							Course Code: BI352P				
Semester: III							Year: Second year				
Academic Year: 2021-22							Batch:2020-22				
	Program Outcomes								Program Specific Outcomes		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	0.5	0.5	0.5	0.5	1.5	2	3	1	1
CO2	3	3	3	2	2.5	2.5	2	3	3	2.5	3
CO3	3	3	3	2	2.5	2.5	2	3	3	2.5	3
BI352P	**3**	**3**	**2.2**	**1.5**	**1.8**	**1.8**	**1.8**	**2.7**	**3**	**2**	**2.3**

Name of the Program: M.Sc Biochemistry											
Name of the Course: Project course work							Course Code: BI 353P				
Semester: III							Year: Second year				
Academic Year: 2021-22							Batch: 2020-22				
	Program Outcomes								Program Specific Outcomes		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	3	3	1	1	3
CO2	3	3	3	1	3	3	3	3	1	1	3
BI353P	**3**	**3**	**3**	**2**	**3**	**3**	**3**	**3**	**1**	**1**	**3**

Name of the Program: M. Sc Biochemistry											
Name of the Course: Physiology and Xenobiotics							Course Code: BI401T				
Semester: IV							Year: Second year				
Academic Year:2021-22							Batch:2020-22				
	Program Outcomes								Program Specific Outcomes		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	2	2	3	1	1	2	2	3	1
CO2	3	3	3	1	2	2	1	2	2	3	1
CO3	3	3	3	2	2	2	1	2	2	3	1

CO4	3	3	3	2	1	1	1	2	3	3	1
BI401T	**3**	**3**	**2.75**	**1.75**	**2**	**1.5**	**1**	**2**	**2.25**	**3**	**1**

Name of the Program: M. Sc Biochemistry											
Name of the Course: Bioinformatics							**Course Code: BI402T**				
Semester: IV							**Year: Second year**				
Academic Year:2021-22							**Batch:2020-22**				
	Program Outcomes								**Program Specific Outcomes**		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	2	1	2	2	2	1	1	3
CO2	3	3	3	2	1	1	2	2	1	1	3
CO3	3	3	3	3	1	1	2	2	2	2	3
CO4	3	3	2	2	1	2	2	2	2	1	3
BI402T	**3**	**3**	**2.75**	**2.25**	**1**	**1.5**	**2**	**2**	**1.5**	**1.25**	**3**

Name of the Program: M. Sc Biochemistry											
Name of the Course: Biotechnology							**Course Code: BI 403T**				
Semester: IV							**Year: Second year**				
Academic Year:2021-22							**Batch:2020-22**				
	Program Outcomes								**Program Specific Outcomes**		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	2	3	1	1	1	1	3	1	1
CO2	3	3	3	3	2	2	1	1	3	1	2
CO3	3	3	3	3	2	2	1	1	3	2	1
CO4	3	3	3	3	1	1	1	1	3	1	3
BI 403T	**3**	**3**	**2.75**	**3**	**1.5**	**1.5**	**1**	**1**	**3**	**1.25**	**1.75**

Name of the Program: M. Sc Biochemistry											
Name of the Course: Endocrinology and metabolic disorders							**Course Code: BI 404T**				
Semester: III							**Year: Second year**				
Academic Year:2021-22							**Batch: 2020-22**				
	Program Outcomes								**Program Specific Outcomes**		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	2	2	1	2	2	3	3	0
CO2	3	3	3	2	2	1	1	2	3	3	2
CO3	3	3	3	3	2	2	3	2	3	3	3
CO4	3	3	3	3	2	2	3	2	3	3	3
BI304T	**3**	**3**	**3**	**2.5**	**2**	**1.5**	**2.25**	**2**	**3**	**3**	**2**
Name of the Program: M.Sc Biochemistry											

Name of the Course: Bioinformatics and Endocrinology								Course Code: BI451P		
Semester: IV								Year: Second year		
Academic Year:2021-22								Batch:2020-22		
	Program Outcomes							Program Specific Outcomes		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	3	2	3	3	3	1	1	2
CO2	3	3	3	2	1	1	3	3	2	1	3
CO3	3	3	3	3	2	3	3	3	1	1	3
CO4	3	3	3	3	1	3	3	3	1	3	1
BI451P	**3**	**3**	**3**	**2.75**	**1.5**	**2.5**	**3**	**3**	**1.25**	**1.5**	**2.25**

Name of the Program:M.Sc Biochemistry											
Name of the Course: Project								Course Code: BI452P			
Semester: IV								Year: Second year			
Academic Year:2021-22								Batch:2020-22			
	Program Outcomes								Program Specific Outcomes		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3
BI452P	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**

Program Targets

Course Title	Course code	Program Outcomes								Program Specific Outcomes		
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
Chemistry and Metabolism of Proteins, Lipids and Porphyrins	BI101T	3	2.25	2.25	3	1.75	1.75	2	2.25	3	2.5	1.25
Chemistry and Metabolism of Carbohydrates, Vitamins and Nucleic Acids	BI102T	3	2.25	2	2.75	2.25	1.5	2	2	3	2.75	0.75
Bio-Analytical Techniques	BI103T	3	2.75	2.75	2.75	2	1.25	2.5	2.75	2.5	1	0
Bioenergetics and Photosynthesis	BI104T	3	1.75	2	2.25	1	1	1.5	2	2.25	1.75	0.75
Amino acid and Protein analysis	BI151P	3	3	2.5	3	1.75	1.5	3	3	3	2	1
Carbohydrate and lipid analysis	BI152P	3	3	3	3	3	3	3	3	3	1	1
Enzymology	BI201T	3	3	3	3	2	1.75	2	2.25	3	2.25	2
Molecular biology	BI202T	3	3	3	2.75	0.75	1.5	0.75	1	2.75	2.5	2.25
Biochemical Genetics and Model organisms	BI203T	3	2.75	3	1.75	1.5	1.25	1.75	2	1.5	0.75	1.25
Biostatistics and Clinical Biochemistry	BI204T	3	3	3	2.5	2	2	2	2	3	3	1.5
Enzymology and Biochemical preparations	BI251P	3	3	3	3	2.5	2.25	3	3	3	1	1
Molecular Biology, genetics and Clinical Biochemistry	BI 252P	3	3	3	3	2.5	2.5	2.5	3	1.5	3	3
Gene regulation and Genetic engineering	BI301T	3	2.75	2.75	2.5	1	1	1	1	3	1.5	1
Immunology and Immunotechnology	BI302T	3	2.75	2.75	2.75	2.25	1.75	2	2.25	2.25	3	1
Cell signalling, Differentiation and Methods of cell study	BI303B	3	3	2.75	2	1.5	0.75	2.5	2	2.25	3	1.5
Microbiology	BI 304T	3	1	1.5	2	1	1	1	1	3	1.5	1.5
Recombinant DNA and Immunotechnology	BI351P	3	3	3	3	1	3	3	3	1	3	3
Cell Biology and Microbiology	BI352P	3	3	2.2	1.5	1.8	1.8	1.8	2.7	3	2	2.3
Project course work	BI353P	3	3	3	2	3	3	3	3	1	1	3
Physiology and Xenobiotics	BI401T	3	3	2.75	1.75	2	1.5	1	2	2.25	3	1
Bioinformatics	BI402T	3	3	2.75	2.25	1	1.5	2	2	1.5	1.25	3
Biotechnology	BI403T	3	3	2.75	3	1.5	1.5	1	1	3	1.25	1.75
Endocrinology and metabolic disorders	BI404T	3	3	3	2.5	2	1.5	2.25	2	3	3	2
Bioinformatics and Endocrinology	BI451P	3	3	3	2.75	1.5	2.5	3	3	1.25	1.5	2.25
Project	BI452P	3	3	3	3	3	3	3	3	3	3	3
Program Target matrix Average		**3.0**	**2.77**	**2.71**	**2.55**	**1.82**	**1.80**	**2.10**	**2.25**	**2.44**	**2.06**	**1.68**

Chemistry and Metabolism of Proteins, Lipids and Porphyrins	BI101T	3	2.25	2.25	3	1.75	1.75	2	2.25	3	2.5	1.25
Chemistry and Metabolism of Carbohydrates, Vitamins &Nucleic Acids	BI102T	3	2.25	2	2.75	2.25	1.5	2	2	3	2.75	0.75
Bio-Analytical Techniques	BI103T	3	2.75	2.75	2.75	2	1.25	2.5	2.75	2.5	1	0
Bioenergetics and Photosynthesis	BI104T	3	1.75	2	2.25	1	1	1.5	2	2.25	1.75	0.75
Amino acid and Protein analysis	BI151P	3	3	2.5	3	1.75	1.5	3	3	3	2	1
Carbohydrate and lipid analysis	BI152P	3	3	3	3	3	3	3	3	3	1	1
Enzymology	BI201T	2	2	2	2	1.333	1.167	1.333	1.5	2	1.5	1.333
Molecular biology	BI202T	3	3	3	2.75	0.75	1.5	0.75	1	2.75	2.5	2.25
Biochemical Genetics and Model organisms	BI203T	2	1.833	2	1.167	1	0.833	1.167	1.333	1	0.5	0.833
Biostatistics and Clinical Biochemistry	BI204T	3	3	3	2.5	2	2	2	2	3	3	1.5
Enzymology and Biochemical preparations	BI251P	3	3	3	3	2.5	2.25	3	3	3	1	1
Molecular Biology, genetics and Clinical Biochemistry	BI252P	3	3	3	3	2.5	2.5	2.5	3	1.5	3	3
Gene regulation and Genetic engineering	BI301T	2	1.833	1.833	1.667	0.667	0.667	0.667	0.667	2	1	0.667
Immunology and Immunotechnology	BI302T	3	2.75	2.75	2.75	2.25	1.75	2	2.25	2.25	3	1
Cell signalling, Differentiation and Methods of cell study	BI303B	1	1	0.917	0.667	0.5	0.25	0.833	0.667	0.75	1	0.5
Microbiology	BI304T	3	1	1.5	2	1	1	1	1	3	1.5	1.5
Recombinant DNA and Immunotechnology	BI351P	3	3	3	3	1	3	3	3	1	3	3
Cell Biology and Microbiology	BI352P	3	3	2.2	1.5	1.8	1.8	1.8	2.7	3	2	2.3
Project course work	BI353P	3	3	3	2	3	3	3	3	1	1	3
Physiology and Xenobiotics	BI401T	3	3	2.75	1.75	2	1.5	1	2	2.25	3	1
Bioinformatics	BI402T	3	3	2.75	2.25	1	1.5	2	2	1.5	1.25	3
Biotechnology	BI403T	3	3	2.75	3	1.5	1.5	1	1	3	1.25	1.75
Endocrinology and metabolic disorders	BI404T	3	3	3	2.5	2	1.5	2.25	2	3	3	2
Bioinformatics and Endocrinology	BI451P	3	3	3	2.75	1.5	2.5	3	3	1.25	1.5	2.25
Project	BI452P	3	3	3	3	3	3	3	3	3	3	3
Attainment matrix Average		**2.8**	**2.58**	**2.52**	**2.4**	**1.723**	**1.73**	**1.973**	**2.123**	**2.28**	**1.92**	**1.59**

Program Attainments

Gaps

Program Outcome targets	**3.00**	**2.77**	**2.71**	**2.55**	**1.82**	**1.80**	**2.10**	**2.25**	**2.44**	**2.06**	**1.68**
Program Outcome Attainments	**2.80**	**2.58**	**2.52**	**2.40**	**1.72**	**1.73**	**1.97**	**2.12**	**2.28**	**1.92**	**1.59**
GAPS	**0.20**	**0.19**	**0.19**	**0.15**	**0.10**	**0.07**	**0.13**	**0.12**	**0.16**	**0.14**	**0.10**