

Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad, Telangana – 500094
Autonomous College – Affiliated to Osmania University
Accredited 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 immuno diagnostics.

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, NUCLEIC ACIDS AND VITAMINS
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	ENZYMOLGY
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
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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	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	Interpret 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	ENDOCRINOLOGY AND METABOLIC DISORDERS
Course Code	BI304T
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	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.
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Name of the Course	MICROBIOLOGY
Course Code	BI404T
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.

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:2018-19									Batch:2018-20		
	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:2018-19									Batch:2018-20		
	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:2018-19									Batch:2018-20		
	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:2018-19									Batch:2018-20		
	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: Communicative English									Course Code: BI105		
Semester: I									Year: First year		
Academic Year:2018-19									Batch:2018-20		
	Program Outcomes								Program Specific Outcomes		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	2.5	2	2	3	1.5	3	3	1	1	1
CO2	3	2.5	2	2	3	1.5	3	3	1	1	1
BI105	3	2.5	2	2	3	1.5	3	3	1	1	1

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:2018-19									Batch:2018-20		
	Program Outcomes								Program Specific Outcomes		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	2.5	2	2	3	3	3	2	1.5
CO2	3	3	3	2.5	2	2	3	3	3	2	1.5
BI151P	3	3	3	2.5	2	2	3	3	3	2	1.5

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:2018-19									Batch:2018-20		
	Program Outcomes								Program Specific		

									Outcomes		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	2	2	1.5	2	2.5	3	3	1.5
CO2	3	3	3	2	2	1.5	2	2.5	3	3	1.5
BI152P	3	3	3	2	2	1.5	2	2.5	3	3	1.5

Name of the Program: M. Sc Biochemistry											
Name of the Course: Enzymology								Course Code: BI201T			
Semester: II								Year: First Year			
Academic Year:2018-19								Batch:2018-20			
	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:2018-19								Batch:2018-20			
	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:2018-19								Batch:2018-20			
	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

Name of the Program: M. Sc Biochemistry											
Name of the Course: Biostatistics and Clinical Biochemistry									Course Code:BI204T		
Semester: II									Year: First Year		
Academic Year:2018-19									Batch:2018-20		
	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: Computer skills									Course Code: BI205		
Semester: II									Year: First year		
Academic Year:2018-19									Batch:2018-20		
	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	3	2.5	3
CO2	3	3	3	3	2	3	3	3	3	2.5	3
BI205	3	3	3	3	2	3	3	3	3	2.5	3

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:2018-19									Batch:2018-20		
	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	2	2	3	3	2
CO2	3	3	3	3	2	3	2	2	3	3	2
BI251P	3	3	3	3	2	3	2	2	3	3	2

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:2018-19									Batch:2018-20		
	Program Outcomes								Program Specific Outcomes		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	3	2.5	3	2	2.5	3	3	3
CO2	3	3	3	3	2.5	3	2	2.5	3	3	3
BI 252P	3	3	3	3	2.5	3	2	2.5	3	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:2019-20									Batch:2018-20		
	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:2019-20									Batch:2018-20		
	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									Course Code:BI303B		

and Methods of cell study											
Semester: III									Year: Second year		
Academic Year:2019-20									Batch:2018-20		
	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: Endocrinology and metabolic disorders									Course Code: BI 304T		
Semester: III									Year: Second year		
Academic Year:2019-20									Batch: 2018-20		
	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: Personality development									Course Code: BI305		
Semester: III									Year: Second year		
Academic Year:2019-20									Batch:2018-20		
	Program Outcomes								Program Specific Outcomes		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	2	3	3	3	3	2.5	2.5	2.5
CO2	3	3	3	2	3	3	3	3	2.5	2.5	2.5
BI305	3	3	3	2	3	3	3	3	2.5	2.5	2.5

Name of the Program: M. Sc Biochemistry											
Name of the Course: Clinical laboratory Diagnostics									Course Code: BI306		
Semester: III									Year: Second year		
Academic Year:2019-20									Batch:2018-20		

	Program Outcomes								Program Specific Outcomes		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	3	2.5	3	2.5	3	3	3	2.5
CO2	3	3	3	3	2.5	3	2.5	3	3	3	2.5
BI306	3	3	3	3	2.5	3	2.5	3	3	3	2.5

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:2019-20									Batch:2018-20		
	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	2.5	3	3	3	3
CO2	3	3	3	3	2	3	2.5	3	3	3	3
BI351P	3	3	3	3	2	3	2.5	3	3	3	3

Name of the Program: M. Sc Biochemistry											
Name of the Course: Cell Biology and Endocrinology									Course Code: BI352P		
Semester: III									Year: Second year		
Academic Year:2019-20									Batch:2018-20		
	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	2.5	3	3	3	2.5
CO2	3	3	3	3	2	3	2.5	3	3	3	2.5
BI352P	3	3	3	3	2	3	2.5	3	3	3	2.5

Name of the Program: M. Sc Biochemistry											
Name of the Course: Physiology and Xenobiotics									Course Code: BI401T		
Semester: IV									Year: Second year		
Academic Year:2019-20									Batch:2018-20		
	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
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Name of the Program: M. Sc Biochemistry											
Name of the Course: Bioinformatics								Course Code: BI402T			
Semester: IV								Year: Second year			
Academic Year:2019-20								Batch:2018-20			
	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:2019-20								Batch:2018-20			
	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: Microbiology								Course Code: BI 404T			
Semester: IV								Year: Second year			
Academic Year:2019-20								Batch:2018-20			
	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: Elements of Marketing								Course Code: BI405T			

Semester: IV									Year: Second year		
Academic Year:2019-20									Batch:2018-20		
	Program Outcomes								Program Specific Outcomes		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	2	3	3	3	3	3	3	2
CO2	3	3	3	2	3	3	3	3	3	3	2
BI405T	3	3	3	2	3	3	3	3	3	3	2

Name of the Program: M. Sc Biochemistry											
Name of the Course: Tax planning for Individuals									Course Code: BI405T		
Semester: IV									Year: Second year		
Academic Year:2019-20									Batch:2018-20		
	Program Outcomes								Program Specific Outcomes		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	2	3	3	3	3	3	3	2
CO2	3	3	3	2	3	3	3	3	3	3	2
BI405T	3	3	3	2	3	3	3	3	3	3	2

Name of the Program: M. Sc Biochemistry											
Name of the Course: Seminar									Course Code: BI406		
Semester: IV									Year: Second year		
Academic Year:2019-20									Batch:2018-20		
	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
BI406	3	3	3	3	3	3	3	3	3	3	3

Name of the Program: M. Sc Biochemistry											
Name of the Course: Bioinformatics and Biotechnology									Course Code: BI451P		
Semester: IV									Year: Second year		
Academic Year:2019-20									Batch:2018-20		
	Program Outcomes								Program Specific Outcomes		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	3	2.5	3	3	3	3	3	3
CO2	3	3	3	3	2.5	3	3	3	3	3	3
BI451P	3	3	3	3	2.5	3	3	3	3	3	3

Name of the Program: M. Sc Biochemistry											
Name of the Course: Project								Course Code: BI452P			
Semester: IV								Year: Second year			
Academic Year:2019-20								Batch:2018-20			
	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

S No	Course Code	Course title	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO 2	PSO 3
1	BI101T	Chemistry and Metabolism of Proteins, Lipids and Porphyrins	3	2.25	2.25	3	1.75	1.75	2	2.25	3	2.5	1.25
2	BI102T	Chemistry and Metabolism of Carbohydrates, Vitamins and Nucleic Acids	3	2.25	2	2.75	2.25	1.5	2	2	3	2.75	0.75
3	BI103T	Bio-Analytical Techniques	3	2.75	2.75	2.75	2	1.25	2.5	2.75	2.5	1	0
4	BI104T	Bioenergetics and Photosynthesis	3	1.75	2	2.25	1	1	1.5	2	2.25	1.75	0.75
5	BI105	Communicative English	3	2.5	2	2	3	1.5	3	3	1	1	1
6	BI151P	Amino acid and protein analysis	3	3	3	2.5	2	2	3	3	3	2	1.5
7	BI152P	Carbohydrate and lipid analysis	3	3	3	2	2	1.5	2	2.5	3	3	1.5
8	BI201T	Enzymology	3	3	3	3	2	1.75	2	2.25	3	2.25	2
9	BI202T	Molecular Biology	3	3	3	2.75	0.75	1.5	0.75	1	2.75	2.5	2.25
10	BI203T	Biochemical Genetics & Model Organisms	3	2.75	3	1.75	1.5	1.25	1.75	2	1.5	0.75	1.25
11	BI204T	Biostatistics & Clinical Biochemistry	3	3	3	2.5	2	2	2	2	3	3	1.5
12	BI205	Computer Skills	3	3	3	3	2	3	3	3	3	2.5	3
13	BI251P	Enzymology & Biochemical Preparations	3	3	3	3	2	3	2	2	3	3	2
14	BI 252P	Molecular Biology, Genetics & Clinical Biochemistry	3	3	3	3	2.5	3	2	2.5	3	3	3
15	BI301T	Gene Regulation and Genetic Engineering	3	2.75	2.75	2.5	1	1	1	1	3	1.5	1
16	BI302T	Immunology & Immunotechnology	3	2.75	2.75	2.75	2.25	1.75	2	2.25	2.25	3	1
17	BI303B	Cell Signaling, differentiation and Methods of cell study	3	3	2.75	2	1.5	0.75	2.5	2	2.25	3	1.5
18	BI304T	Endocrinology and Metabolic Disorders	3	3	3	2.5	2	1.5	2.25	2	3	3	2
19	BI305	Personality Development	3	3	3	2	3	3	3	3	2.5	2.5	2.5
20	BI306	Clinical Laboratory Diagnostics	3	3	3	3	2.5	3	2.5	3	3	3	2.5
21	BI351P	Recombinant DNA and Immunotechnology	3	3	3	3	2	3	2.5	3	3	3	3
22	BI352P	Cell biology and Endocrinology	3	3	3	3	2	3	2.5	3	3	3	2.5
23	BI401T	Physiology and Xenobiotics	3	3	2.75	1.75	2	1.5	1	2	2.25	3	1
24	BI402T	Bio Informatics	3	3	2.75	2.25	1	1.5	2	2	1.5	1.25	3
25	BI 403T	Bio Technology	3	3	2.75	3	1.5	1.5	1	1	3	1.25	1.75
26	BI 404T	Microbiology	3	1	1.5	2	1	1	1	1	3	1.5	1.5
27	BI405T	Elements of Marketing/ Tax Planning for Individuals	3	3	3	2	3	3	3	3	3	3	2
28	BI406	Seminar	3	3	3	3	3	3	3	3	3	3	3
29	BI451P	Bioinformatics and Biotechnology	3	3	3	3	2.5	3	3	3	3	3	3
30	BI452P	Project	3	3	3	3	3	3	3	3	3	3	3

Total	90	83.75	83	77	60	60.5	64.75	69.5	80.75	72	56
Program Outcome Targets	3	2.792	2.767	2.567	2	2.017	2.158	2.317	2.692	2.4	1.867

Program Attainments

S No	Course Code	Course title	PO1	PO2	PO3	PO4	PO5	PO6	PO 7	PO8	PSO1	PSO2	PSO3
1	BI101T	Chemistry and Metabolism of Proteins, Lipids and Porphyrins	3	2.25	2.25	3	1.75	1.75	2	2.25	3	2.5	1.25
2	BI102T	Chemistry and Metabolism of Carbohydrates , Vitamins and Nucleic Acids	3	2.25	2	2.75	2.25	1.5	2	2	3	2.75	0.75
3	BI103T	Bio-Analytical Techniques	2	1.83	1.83	1.83	1.33	0.83	1.67	1.83	1.67	0.67	0
4	BI104T	Bioenergetics and Photosynthesis	3	1.75	2	2.25	1	1	1.5	2	2.25	1.75	0.75
5	BI105	Communicative English	3	2.5	2	2	3	1.5	3	3	1	1	1
6	BI151P	Amino acid and protein analysis	3	3	3	2.5	2	2	3	3	3	2	1.5
7	BI152P	Carbohydrate and lipid analysis	3	3	3	2	2	1.5	2	2.5	3	3	1.5
8	BI201T	Enzymology	3	3	3	3	2	1.75	2	2.25	3	2.25	2
9	BI202T	Molecular Biology	3	3	3	2.75	0.75	1.5	0.75	1	2.75	2.5	2.25
10	BI203T	Biochemical Genetics & Model Organisms	3	2.75	3	1.75	1.5	1.25	1.75	2	1.5	0.75	1.25
11	BI204T	Biostatistics & Clinical Biochemistry	2	2	2	1.67	1.33	1.33	1.33	1.33	2	2	1
12	BI205	Computer Skills	3	3	3	3	2	3	3	3	3	2.5	3
13	BI251P	Enzymology & Biochemical Preparations	3	3	3	3	2	3	2	2	3	3	2
14	BI252P	Molecular Biology, Genetics & Clinical Biochemistry	3	3	3	3	2.5	3	2	2.5	3	3	3

15	BI301T	Gene Regulation and Genetic Engineering	3	2.75	2.75	2.5	1	1	1	1	3	1.5	1
16	BI302T	Immunology & Immuno technology	3	2.75	2.75	2.75	2.25	1.75	2	2.25	2.25	3	1
17	BI303B	Cell Signaling, differentiation and Methods of cell study	2	2	1.83	1.33	1	0.5	1.67	1.33	1.5	2	1
18	BI304T	Endocrinology and Metabolic Disorders	3	3	3	2.5	2	1.5	2.25	2	3	3	2
19	BI305	Personality Development	3	3	3	2	3	3	3	3	2.5	2.5	2.5
20	BI306	Clinical Laboratory Diagnostics	3	3	3	3	2.5	3	2.5	3	3	3	2.5
21	BI351P	Recombinant DNA and Immuno technology	3	3	3	3	2	3	2.5	3	3	3	3
22	BI352P	Cell biology and Endocrinology	3	3	3	3	2	3	2.5	3	3	3	2.5
23	BI401T	Physiology and Xenobiotics	3	3	2.75	1.75	2	1.5	1	2	2.25	3	1
24	BI402T	Bio Informatics	3	3	2.75	2.25	1	1.5	2	2	1.5	1.25	3
25	BI403T	Bio Technology	3	3	2.75	3	1.5	1.5	1	1	3	1.25	1.75
26	BI404T	Microbiology	3	1	1.5	2	1	1	1	1	3	1.5	1.5
27	BI405T	Elements of Marketing/ Tax Planning for Individuals	3	3	3	2	3	3	3	3	3	3	2
28	BI406	Seminar	3	3	3	3	3	3	3	3	3	3	3
29	BI451P	Bioinformatics and Biotechnology	3	3	3	3	2.5	3	3	3	3	3	3
30	BI452P	Project	3	3	3	3	3	3	3	3	3	3	3
Total			87	80.83	80.16	74.58	58.16	59.16	62.4	67.24	78.17	69.67	55
Program outcome attainments			2.9	2.694	2.672	2.486	1.939	1.972	2.08	2.241	2.606	2.322	1.833

Gap

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
Program outcome Targets	3	2.792	2.767	2.567	2	2.017	2.158	2.317	2.692	2.4	1.867
Program outcome Attainments	2.9	2.694	2.672	2.486	1.939	1.972	2.08	2.241	2.606	2.322	1.833
Gaps	0.1	0.097	0.095	0.08	0.06	0.05	0.08	0.08	0.09	0.08	0.03

Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad, Telangana – 500094
Autonomous College – Affiliated to Osmania University
Accredited 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 immuno diagnostics.

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, NUCLEIC ACIDS AND VITAMINS
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	ENZYMOLGY
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	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	Interpret 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	ENDOCRINOLOGY AND METABOLIC DISORDERS
Course Code	BI304T
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	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	MICROBIOLOGY
Course Code	BI404T
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.

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:2017-18									Batch:2017-19		
	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:2017-18									Batch:2017-19		
	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:2017-18									Batch:2017-19		
	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:2017-18									Batch:2017-19		
	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: Communicative English									Course Code: BI105		
Semester: I									Year: First year		
Academic Year:2017-18									Batch:2017-19		
	Program Outcomes								Program Specific Outcomes		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	2.5	2	2	3	1.5	3	3	1	1	1
CO2	3	2.5	2	2	3	1.5	3	3	1	1	1
BI105	3	2.5	2	2	3	1.5	3	3	1	1	1

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:2017-18									Batch:2017-19		
	Program Outcomes								Program Specific Outcomes		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	2.5	2	2	3	3	3	2	1.5
CO2	3	3	3	2.5	2	2	3	3	3	2	1.5
BI151P	3	3	3	2.5	2	2	3	3	3	2	1.5

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:2017-18									Batch:2017-19		
	Program Outcomes								Program Specific Outcomes		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	2	2	1.5	2	2.5	3	3	1.5
CO2	3	3	3	2	2	1.5	2	2.5	3	3	1.5
BI152P	3	3	3	2	2	1.5	2	2.5	3	3	1.5

Name of the Program: M. Sc Biochemistry											
Name of the Course: Enzymology									Course Code: BI201T		
Semester: II									Year: First Year		
Academic Year:2017-18									Batch:2017-19		
	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:2017-18									Batch:2017-19		
	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:2017-18									Batch:2017-19		
	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

Name of the Program: M. Sc Biochemistry											
Name of the Course: Biostatistics and Clinical Biochemistry									Course Code:BI204T		
Semester: II									Year: First Year		
Academic Year:2017-18									Batch:2017-19		
	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: Computer skills								Course Code: BI205			
Semester: II								Year: First year			
Academic Year:2017-18								Batch:2017-19			
	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	3	2.5	3
CO2	3	3	3	3	2	3	3	3	3	2.5	3
BI205	3	3	3	3	2	3	3	3	3	2.5	3

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:2017-18								Batch:2017-19			
	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	2	2	3	3	2
CO2	3	3	3	3	2	3	2	2	3	3	2
BI251P	3	3	3	3	2	3	2	2	3	3	2

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:2017-18								Batch:2017-19			
	Program Outcomes							Program Specific Outcomes			
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	3	2.5	3	2	2.5	3	3	3
CO2	3	3	3	3	2.5	3	2	2.5	3	3	3
BI 252P	3	3	3	3	2.5	3	2	2.5	3	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:2018-19									Batch:2017-19		
	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:2018-19									Batch:2017-19		
	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:2018-19									Batch:2017-19		
	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: Endocrinology and metabolic disorders								Course Code: BI 304T			
Semester: III								Year: Second year			
Academic Year:2018-19								Batch: 2017-19			
	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: Personality development								Course Code: BI305			
Semester: III								Year: Second year			
Academic Year:2018-19								Batch:2017-19			
	Program Outcomes								Program Specific Outcomes		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	2	3	3	3	3	2.5	2.5	2.5
CO2	3	3	3	2	3	3	3	3	2.5	2.5	2.5
BI305	3	3	3	2	3	3	3	3	2.5	2.5	2.5

Name of the Program: M. Sc Biochemistry											
Name of the Course: Clinical laboratory Diagnostics								Course Code: BI306			
Semester: III								Year: Second year			
Academic Year:2018-19								Batch:2017-19			
	Program Outcomes								Program Specific Outcomes		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	3	2.5	3	2.5	3	3	3	2.5
CO2	3	3	3	3	2.5	3	2.5	3	3	3	2.5
BI306	3	3	3	3	2.5	3	2.5	3	3	3	2.5

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:2018-19									Batch:2017-19		
	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	2.5	3	3	3	3
CO2	3	3	3	3	2	3	2.5	3	3	3	3
BI351P	3	3	3	3	2	3	2.5	3	3	3	3

Name of the Program: M. Sc Biochemistry											
Name of the Course: Cell Biology and Endocrinology									Course Code: BI352P		
Semester: III									Year: Second year		
Academic Year:2018-19									Batch:2017-19		
	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	2.5	3	3	3	2.5
CO2	3	3	3	3	2	3	2.5	3	3	3	2.5
BI352P	3	3	3	3	2	3	2.5	3	3	3	2.5

Name of the Program: M. Sc Biochemistry											
Name of the Course: Physiology and Xenobiotics									Course Code: BI401T		
Semester: IV									Year: Second year		
Academic Year:2018-19									Batch:2017-19		
	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:2018-19								Batch:2017-19			
	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:2018-19								Batch:2017-19			
	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: Microbiology								Course Code: BI 404T			
Semester: IV								Year: Second year			
Academic Year:2018-19								Batch:2017-19			
	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: Elements of Marketing								Course Code: BI405T			
Semester: IV								Year: Second year			
Academic Year:2018-19								Batch:2017-19			
	Program Outcomes								Program Specific Outcomes		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	2	3	3	3	3	3	3	2
CO2	3	3	3	2	3	3	3	3	3	3	2
BI405T	3	3	3	2	3	3	3	3	3	3	2

Name of the Program: M. Sc Biochemistry											
Name of the Course: Tax planning for Individuals								Course Code: BI405T			
Semester: IV								Year: Second year			
Academic Year:2018-19								Batch:2017-19			
	Program Outcomes								Program Specific Outcomes		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	2	3	3	3	3	3	3	2
CO2	3	3	3	2	3	3	3	3	3	3	2
BI405T	3	3	3	2	3	3	3	3	3	3	2

Name of the Program: M. Sc Biochemistry											
Name of the Course: Seminar								Course Code: BI406			
Semester: IV								Year: Second year			
Academic Year:2018-19								Batch:2017-19			
	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
BI406	3	3	3	3	3	3	3	3	3	3	3

Name of the Program: M. Sc Biochemistry											
Name of the Course: Bioinformatics and Biotechnology									Course Code: BI451P		
Semester: IV									Year: Second year		
Academic Year:2018-19									Batch:2017-19		
	Program Outcomes								Program Specific Outcomes		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	3	2.5	3	3	3	3	3	3
CO2	3	3	3	3	2.5	3	3	3	3	3	3
BI451P	3	3	3	3	2.5	3	3	3	3	3	3

Name of the Program: M. Sc Biochemistry											
Name of the Course: Project									Course Code: BI452P		
Semester: IV									Year: Second year		
Academic Year:2018-19									Batch:2017-19		
	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

S No	Course Code	Course title	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
1	BI101T	Chemistry and Metabolism of Proteins, Lipids and Porphyrins	3	2.25	2.25	3	1.75	1.75	2	2.25	3	2.5	1.25
2	BI102T	Chemistry and Metabolism of Carbohydrates, Vitamins and Nucleic Acids	3	2.25	2	2.75	2.25	1.5	2	2	3	2.75	0.75
3	BI103T	Bio-Analytical Techniques	3	2.75	2.75	2.75	2	1.25	2.5	2.75	2.5	1	0
4	BI104T	Bioenergetics and Photosynthesis	3	1.75	2	2.25	1	1	1.5	2	2.25	1.75	0.75
5	BI105	Communicative English	3	2.5	2	2	3	1.5	3	3	1	1	1
6	BI151P	Amino acid and protein analysis	3	3	3	2.5	2	2	3	3	3	2	1.5
7	BI152P	Carbohydrate and lipid analysis	3	3	3	2	2	1.5	2	2.5	3	3	1.5
8	BI201T	Enzymology	3	3	3	3	2	1.75	2	2.25	3	2.25	2
9	BI202T	Molecular Biology	3	3	3	2.75	0.75	1.5	0.75	1	2.75	2.5	2.25
10	BI203T	Biochemical Genetics & Model Organisms	3	2.75	3	1.75	1.5	1.25	1.75	2	1.5	0.75	1.25
11	BI204T	Biostatistics & Clinical Biochemistry	3	3	3	2.5	2	2	2	2	3	3	1.5
12	BI205	Computer Skills	3	3	3	3	2	3	3	3	3	2.5	3

13	BI251P	Enzymology & Biochemical Preparations	3	3	3	3	2	3	2	2	3	3	2
14	BI 252P	Molecular Biology, Genetics & Clinical Biochemistry	3	3	3	3	2.5	3	2	2.5	3	3	3
15	BI301T	Gene Regulation and Genetic Engineering	3	2.75	2.75	2.5	1	1	1	1	3	1.5	1
16	BI302T	Immunology & Immunotechnology	3	2.75	2.75	2.75	2.25	1.75	2	2.25	2.25	3	1
17	BI303B	Cell Signaling, differentiation and Methods of cell study	3	3	2.75	2	1.5	0.75	2.5	2	2.25	3	1.5
18	BI304T	Endocrinology and Metabolic Disorders	3	3	3	2.5	2	1.5	2.25	2	3	3	2
19	BI305	Personality Development	3	3	3	2	3	3	3	3	2.5	2.5	2.5
20	BI306	Clinical Laboratory Diagnostics	3	3	3	3	2.5	3	2.5	3	3	3	2.5
21	BI351P	Recombinant DNA and Immunotechnology	3	3	3	3	2	3	2.5	3	3	3	3
22	BI352P	Cell biology and Endocrinology	3	3	3	3	2	3	2.5	3	3	3	2.5
23	BI401T	Physiology and Xenobiotics	3	3	2.75	1.75	2	1.5	1	2	2.25	3	1
24	BI402T	Bio Informatics	3	3	2.75	2.25	1	1.5	2	2	1.5	1.25	3
25	BI 403T	Bio Technology	3	3	2.75	3	1.5	1.5	1	1	3	1.25	1.75
26	BI 404T	Microbiology	3	1	1.5	2	1	1	1	1	3	1.5	1.5
27	BI405T	Elements of Marketing/ Tax Planning for Individuals	3	3	3	2	3	3	3	3	3	3	2
28	BI406	Seminar	3	3	3	3	3	3	3	3	3	3	3
29	BI451P	Bioinformatics and Biotechnology	3	3	3	3	2.5	3	3	3	3	3	3
30	BI452P	Project	3	3	3	3	3	3	3	3	3	3	3
Total			90	83.7 5	83	77	60	60.5	64.7 5	69.5	80.75	72	56
Program Outcome Targets			3	2.79 2	2.76 7	2.56 7	2	2.01 6	2.15	2.31 7	2.691	2.4	1.867

Program Attainments

S No	Course Code	Course title	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO 1	PSO 2	PSO 3
1	BI101T	Chemistry and Metabolism of Proteins, Lipids and Porphyrins	1	0.75	0.8	1	0.6	0.6	0.7	0.8	1	0.83	0.42
2	BI102T	Chemistry and Metabolism of Carbohydrates, Vitamins and Nucleic Acid	3	2.25	2	2.8	2.3	1.5	2	2	3	2.75	0.75
3	BI103T	Bio-Analytical Techniques	3	2.75	2.8	2.8	2	1.3	2.5	2.8	2.5	1	0

4	BI104T	Bioenergetics and Photosynthesis	3	1.75	2	2.3	1	1	1.5	2	2.25	1.75	0.75
5	BI105	Communicative English	3	2.5	2	2	3	1.5	3	3	1	1	1
6	BI151P	Amino acid and protein analysis	3	3	3	2.5	2	2	3	3	3	2	1.5
7	BI152P	Carbohydrate and lipid analysis	3	3	3	2	2	1.5	2	2.5	3	3	1.5
8	BI201T	Enzymology	3	3	3	3	2	1.8	2	2.3	3	2.25	2
9	BI202T	Molecular Biology	3	3	3	2.8	0.8	1.5	0.8	1	2.75	2.5	2.25
10	BI203T	Biochemical Genetics & Model Organisms	3	2.75	3	1.8	1.5	1.3	1.8	2	1.5	0.75	1.25
11	BI204T	Biostatistics & Clinical Biochemistry	1	1	1	0.8	0.7	0.7	0.7	0.7	1	1	0.5
12	BI205	Computer Skills	1	1	1	1	0.7	1	1	1	1	0.83	1
13	BI251P	Enzymology & Biochemical Preparations	3	3	3	3	2	3	2	2	3	3	2
14	BI 252P	Molecular Biology, Genetics & Clinical Biochemistry	3	3	3	3	2.5	3	2	2.5	3	3	3
15	BI301T	Gene Regulation and Genetic Engineering	2	1.83	1.8	1.7	0.7	0.7	0.7	0.7	2	1	0.67
16	BI302T	Immunology & Immunotechnology	3	2.75	2.8	2.8	2.3	1.8	2	2.3	2.25	3	1
17	BI303B	Cell Signaling, differentiation and Methods of cell study	3	3	2.8	2	1.5	0.8	2.5	2	2.25	3	1.5
18	BI304T	Endocrinology and Metabolic Disorders	3	3	3	2.5	2	1.5	2.3	2	3	3	2
19	BI305	Personality Development	3	3	3	2	3	3	3	3	2.5	2.5	2.5
20	BI306	Clinical Laboratory Diagnostics	3	3	3	3	2.5	3	2.5	3	3	3	2.5
21	BI351P	Recombinant DNA and Immunotechnology	3	3	3	3	2	3	2.5	3	3	3	3
22	BI352P	Cell biology and Endocrinology	3	3	3	3	2	3	2.5	3	3	3	2.5
23	BI401T	Physiology and Xenobiotics	3	3	2.8	1.8	2	1.5	1	2	2.25	3	1
24	BI402T	Bio Informatics	3	3	2.8	2.3	1	1.5	2	2	1.5	1.25	3
25	BI 403T	Bio Technology	3	3	2.8	3	1.5	1.5	1	1	3	1.25	1.75
26	BI 404T	Microbiology	3	1	1.5	2	1	1	1	1	3	1.5	1.5
27	BI405T	Elements of Marketing/ Tax Planning for Individuals	3	3	3	2	3	3	3	3	3	3	2
28	BI406	Seminar	3	3	3	3	3	3	3	3	3	3	3
29	BI451P	Bioinformatics and Biotechnology	3	3	3	3	2.5	3	3	3	3	3	3
30	BI452P	Project	3	3	3	3	3	3	3	3	3	3	3

Total	83	77.3	77	71	56	56	60	64	73.75	66.16	51.84
Program outcome attainments	2.766	2.578	2.552	2.35	1.861	1.856	1.99	2.144	2.458	2.205	1.728

Gap

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
Program outcome targets	3	2.792	2.767	2.567	2	2.017	2.158	2.317	2.692	2.4	1.867
Program outcome attainments	2.766	2.578	2.552	2.35	1.861	1.856	1.99	2.144	2.458	2.205	1.728
Gaps	0.23	0.21	0.21	0.22	0.13	0.16	0.17	0.17	0.23	0.19	0.14