Bhavan's Vivekananda College

of Science, Humanities and Commerce
(Sainikpuri, Secunderbad, 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.

P05: 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.

P06: 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.

P07: Individual and Team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

P08: 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 signalling 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.
C03	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.
C03	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.
C03	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.
C03	Relate different membrane transport mechanisms with their functions.
CO4	Distinguish the different pathways of photosynthesis and their regulation.

Name of the Course	**ENZYMOLOGY**
Course Code	**BI201T**
CO1	Interpret the concepts of enzyme catalysis.
CO2	Differentiate kinetic behaviour of single and bi-substrate reactions, in presence and absence of inhibitors
C03	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.
C03	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.
C03	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.
C03	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.
C03	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.
C03	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 organisation of different cell types.
CO2	Identify suitable methods to study cells.
C03	Interpret the different cellular signalling 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	Analyse the process of endocrine regulation.
C03	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.
C03	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.
C03	Apply the knowledge of proteomics methods for proteome analysis.
CO4	Correlate the importance and relevance of synthetic genes.

ame 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.
C03	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.