- **Course Outcome's**

SEMESTER 1

1. **Cell Biology (PSBCTC101)**

- CO101.1: Differentiate between prokaryotic and eukaryotic cells
- CO101.2: Delineate chemical composition, physiochemical and functional organization of organelles.
- CO101.3: Sketch out the cellular basis of differentiation and development.
- CO101.4: Analyse the functioning of life at cellular level like cell signaling, cell-cell communication, cell growth, division, cell cycle and their regulations

2. **Biophysical and Bio-organic Chemistry (PSBCTC102)**

- CO102.1: Aware of properties of acids, bases and buffers and should be able to solve numerical problems based on the concept of pH and buffers
- CO102.2: Understand the principle, working and applications of analytical techniques available for studying biochemical and biophysical nature of life
- CO102.3: Concept building on the structure and biochemical functions of steroids, vitamins, antibiotics and alkaloids

3. Biomolecules (PSBCTC107)

- CO107.1: Structure and biological importance of macromolecules
- CO107.2: Comprehend the role played by various bonds and chemical interactions in maintenance of different structural hierarchy of macromolecules.
- CO107.3: Figure out the role of three dimensional structures with biological activity of macromolecule.

4. Molecular Biology (PSBCTC104)

- CO104.1: Understands the genomic organization of living organisms, study of genes genome, chromosome.
- CO104.2: Aware of molecular mechanism underlying in the process of prokaryotic DNA replication.
- CO104.3: Importance of gene expression (transcription & translation) and their regulations.

SEMESTER 2

1. Genetic Engineering (PSBCTC201)

- CO201.1: Basic principles, the tools and techniques of cloning and gene sequencing.
- CO201.2: Advantages and limitations of expression vectors
- CO201.3: Skills of applying genetic engineering technologies in various fields of Biotechnology.
- CO201.4: To devise recombinant molecules and apply information extracted from various sources to solve the problems

2. Enzymology (PSBCTC202)

- CO202.1: Understanding about the importance of enzymes in biological reactions and able to differentiate between chemical catalyst and biocatalyst.
- CO202.2: Aware of molecular basis of enzyme catalysed reactions along with their kinetics and regulation.
- CO202.3: Become conscious about importance of enzymes in clinical diagnosis and industries.

3. Genetics (PSBCTC203)

- CO203.1: Mendelian and Neo-mendelian inheritance.
- CO203.2: Understand the principles and mechanisms of linkage and crossing over.
- CO203.3: Broad understanding of the fundamentals of genomics.
- CO203.4: Familiarity to cutting edge technologies used in the field.

4. Molecular Viorology (PSBCTC204)

- CO204.1: Able to discuss principles of viral pathogenesis.
- CO204.2: Familiarity to different type of diseases causing viruses.
- CO204.3: Explain host antiviral resistance mechanisms.
- CO204.4: Could building concepts for controlling viral infections.

5. Immunology (PSBCTC205)

- CO205.1: Basic understanding about immune cells and organs of immune system
- CO205.2: Understanding about the concept of humoral and cell mediated immunity.
- CO205.3: Knowledge about the concept of immune pathology
- CO205.4: Become conscious about immunological methods used in diagnosis and vaccine production

SEMESTER 3

1. **Plant Biochemistry (PSBCTC301)**

- CO301.1: Understanding about the role of cell organelles and their functions.
- CO301.2: Classify various biosynthetic pathways of secondary metabolites.
- CO301.3: Idea about the phytohormones and their mechanism of action.
- CO301.4: Biochemistry of plant development and stress metabolism.

2. **Intermediary Metabolism (PSBCTC302)**

- CO302.1: Understanding about the importance of metabolism.
- CO302.2: Aware of the metabolism of amino acids, nucleic acids and its regulation.
- CO302.3: Describe the metabolic regulation of carbohydrates pathway.
- CO302.4: Illustrate the metabolism of lipids and its regulation

3. **Bioinformatics and Biostatistics (PSBCTC311)**

- CO311.1: Basic concepts of Bioinformatics and its significance in biological data analysis.
- CO311.2: Knowledge about various Biological databases and database search tools.
- CO311.3: Broad understanding about statistical methods and application of different statistical packages in Biological research
- CO311.4: Familiarity to sequence analysis.

4. Mammalian Hormones (PSBCTC308)

- CO308.1: Classify hormones based on different entities such as nature or mechanism of actions.
- CO308.2: Regulation of Hormone synthesis.
- CO308.3: Able to discuss the role of hormones in metabolic regulation.
- CO308.4: Familiarity to disorders caused by hypo or hyper secretion of hormones.

4. IPRS, Bioethics and Entrepreneurship Development (PSBCTC309)

- CO309.1: Understand regulatory principles and practice involved in protection of intellectual property rights (including copyright, patents, designs and trademarks).
- CO309.2: Awareness on the biosafety, Bioethics and patenting of biochemical processes and products.
- CO309.3: Knowledge on aspects of national and international patents and patient registration.
- CO309.4: Understanding about the legal, ethical and social impacts of biological research.

5. Nanotechnology in Biology (PSBCTC310)

- CO310.1: Understanding about biological system with nanoscience prospective.
- CO310.2: Knowledge on methodologies involved in the synthesis of nanomaterials.
- CO310.3: Techniques involved in characterization of nanoparticles.
- CO310.4: Aware of various applications of nanoparticles

SEMESTER 4

1. Nutritional Biochemistry (PSBCTC403)

- CO403.1: Understanding about the importance of nutritional requirements and nitrogen balance in human health.
- CO403.2: Role of the macro and micro minerals in health and diseases.
- CO403.3: Differentiate between fat soluble vitamins and water-soluble vitamins, biochemical functions and synthesis for these vitamins.
- CO403.4: To formulate diet for persons affected by diseases related life style or nutritional in insufficiency.

2. Clinical Biochemistry (PSBCTC404)

- CO404.1: Concept building on relevance of physiological alterations and disease onset.
- CO404.2: Understanding about the patho-physiology of metabolic disorders
- CO404.3: Role of enzymes in diagnosis of diseases.
- CO404.4: Tool and diagnostic methods adapted for diagnosis of genetic disorders.

3. Dissertation (PSBCDC406)

- CO406.1: Handling of a research project in a laboratory in the department
- CO406.2: Development of designing, performing and analyzing outcomes of experiments
- CO406.3: Development of reading, and understanding research publications.
- CO406.4: Learning various research techniques and development of troubleshooting skills.

4. Journal Club (PSBCDC402)

- CO402.1:Understanding of new developments in the biological field.
- CO402.2: Understanding research field through reading of published research.
- CO402.3: Developing scientific presentation making skills.
- CO402.4: Development of oratory skills and defending results and findings presented in a scientific presentation.