GOVERNMENT DEGREE COLLEGE BARAMULLA

Semester 3rd **Major/Minor Course**

Subject: Zoology

Title: Essentials of Biological Chemistry **Course code: BZO22S301**
Credits: 6: Th: 4, Pr. 02 Contact hours: 64 (T) + 64 (P)

Theory (Credits 04)
COURSE OBJECTIVE:
The primary objective of the "Essentials of Biological Chemistry" course is to provide students with a fundamental understanding of the key principles, concepts, and chemical processes that support the biological systems and processes.
COURSE OUTCOME:
Upon successful completion of the "Essentials of Biological Chemistry" course, students will be able to:
Demonstrate Knowledge: *Exhibit a thorough understanding of the fundamental principles and concepts of biological chemistry, including the structure and function of biomolecules, cellular processes, and metabolic pathways.*
Analyze Biological Systems: *Analyze and interpret biochemical data to understand the underlying mechanisms of biological systems and their regulation.*
Interrelate Concepts: *Connect and interrelate different concepts in biological chemistry to demonstrate a holistic understanding of how molecules and processes function within living organisms.*
Perform Laboratory Techniques: *Demonstrate competence in basic laboratory techniques used in biological chemistry research and experimentation.*

Unit 1 Carbohydrates

1.1 Definition, Classification, Nomenclature, Structure and functions of carbohydrates.

1.2 Physico-Chemical properties of sugars.

1.3 Glycolysis, Krebs cycle, Pentose phosphate pathway, Gluconeogenesis, Glycogen metabolism

1.4 Electron transport chain, Mechanism of oxidative phosphorylation.

Unit II Proteins

2.1 Definition, Classification and Properties of amino acids.

2.2 Chemical bonds involved in protein structure

2.3 Primary, Secondary, Tertiary and Quaternary structure of proteins.

2.4 Catabolism of amino group (Transamination and deamination) and urea cycle

Unit III Lipids

3.1 Definition, Types and Structure of saturated and unsaturated fatty acids.

3.2 Biosynthesis and Utilization of ketone bodies

3.3 Biosynthesis of palmitic acid

3.4 Beta and Omega oxidation of saturated fatty acids

Unit IV Nucleic acids

4.1 Overview of nucleic acids: DNA and RNA

4.2 Structure and Properties of nucleotides

4.3 Biosynthesis of purine & pyrimidine,

4.4 Degradation of purine & pyrimidine.

Practical 02 Credits

1. Estimation of protein by Folin Lowry method
2. Qualitative tests of carbohydrates and amino acid
3. Estimation of total carbohydrates by Calorimetric method
4. Extract DNA/RNA from tissue using a simple extraction method
5. Visualize and separate DNA fragments using agarose gel electrophoresis.
6. Separate and identify different lipid and amino acids components in a mixture using thin-layer chromatography.
7. Estimation of Cholesterol
8. Extract lipids from a food sample and separate them based on their solubility

Books recommended

1. Lippincott's Illustrated Reviews: Biochemistry by Pamela C. Champe and Richard A. Harvey 2. Principles of Biochemistry by Lehninger
3. Fundamentals of Biochemistry by J. L. Jain, S. Chand & Company Ltd.
4. Biochemistry by Stryer

GOVERNMENT DEGREE COLLEGE BARAMULLA

SEMESTER – 3rd **SKILL ENHANCEMENT COURSE (SEC)**

Subject: Zoology

Title: Apiculture-III Course code: BZO22S302
Credits: 4: Th-02, Pr-02) Contact hours: 32 (T) + 32 (L)

Course Objectives: To impart skill regarding Apiculture and to promote it as a skill course so that people are educated regarding the commercial aspects of Apiculture.

Learning outcomes: After thoroughly understanding the course the student should be able to: learn basic Apiculture skills and demonstration and identification of different species of extraction of honey and its processing; and Importance of Honey bees in rural Economy.

THEORY (2 CREDITS)

Unit I social organization in bees (16 hours)

1. Bee foraging
2. Nesting behavior
3. Altruistic behavior in worker bees.
4. Swarming, nuptial flight

Unit II Bee diseases (16 hours)

1. Killer Bees
2. Brood Diseases
3. Acrine mite, dysentery, nosema
4. Varroa and wax moths

PRACTICAL (2 CREDITS) (32 hours)

1. Inspection of honey bee colonies to study social organization of bee colony.
2. Structural and functional study of artificial bee hive.
3. Sugar feeding of colonies during floral dearth period.
4. Extraction packaging and storage of honey.
5. Visit of to an apiary.

SUGGESTED READINGS

1) Prost P. J. (1962). Apiculture. Oxford and IBH, New Delhi.
2) Bisht D.S., Apiculture, ICAR Publication.
3) Singh S., Beekeeping in India, Indian council of Agricultural Research, New Delhi

GOVERNMENT DEGREE COLLEGE BARAMULLA

SEMESTER – 1st **Multidisciplinary Course**

Subject: Zoology

Title: Basic Pathology **Course code: BZO22M103**

(CREDITS (3): THEORY – 03 Contact hours: 48 (T)

Course objectives: To provide general information to students about various diseases

*To provide information to students about cause, symptoms, Diagnosis and treatment of various Diseases.

Learning Outcomes: After thoroughly understanding the course, the students should be able to

- Learn about commonly occurring diseases, pathogens and their preventive measures
- To protect themselves from various diseases & suggest others also as well.

UNIT – 1: BASIC PATHOLOGY -I

1. Diseases –General Introduction & Classification (Communicable & Non Communicable Diseases).
2. Bacterial Diseases: Tuberculosis and Typhoid.
3. Protozoan Diseases: Malaria.

UNIT – 2: BASIC PATHOLOGY -II

1. Viral diseases: AIDS and Hepatitis
2. Fungal diseases: Ringworm.
3. Helminth diseases: Ascariasis.

UNIT – 3: BASIC PATHOLOGY –III

1. Life style Diseases – Hypertention & Diabeties Mellitus.
2. Hormone deficiency diseases –Gigantism & Diabities Insipidus.
3. Autoimmune diseases: Rheumatoid arthritis.