

## BIOLOGY (+1) (2024-2025)

The present syllabus reinforces the ideas introduced in the lower classes while the students learn new concepts besides getting an exposure to contemporary areas of the subject. The syllabus also aims at emphasizing the underlying principles that are common to both animals and plants as well as highlighting the relationships of biology with other areas of knowledge. The format of the syllabus allows a simple, clear, consequential flow of concepts without any jarring jumps. The syllabus also stresses the connection of the study of Biology to real life problems, use of biological discoveries/innovations in everyday life-in environment, nature, medicine, health and agriculture. The updated syllabus also focuses on reducing the curriculum load while ensuring that ample opportunities and scope for learning and appreciating basic concepts of the subject continues to be available within its framework.

The prescribed syllabus is expected to

- Promote understanding of basic principles of biology
- Learning of emerging knowledge and its relevance to individual and society.
- Encourage rational/specific attitude to issues related to population, environment and development.
- Enhance awareness about environmental issues and problems and the appropriate solutions.
- Create awareness amongst the learners about variations amongst the living and developing respect for the diversities and to appreciate that the most complex biological phenomenon are also built on essentially simple processes

It is expected that the students would get an exposure to various branches of Biology in the syllabus in a more contextual and friendly manner as they study its various units.

### COURSE STRUCTURE

Time : 3 Hrs

(THEORY)

Max. Marks : 60

#### **UNIT I :- DIVERSITY IN THE LIVING WORLD**

Chapter 1 : The Living World

Chapter 2 : Biological Classification

Chapter 3 : Plant Kingdom

Chapter 4 : Animal Kingdom

#### **UNIT II :- STRUCTURAL ORGANISATION IN PLANTS AND ANIMALS**

Chapter 5 : Morphology of Flowering Plants

Chapter 6 : Anatomy of Flowering Plants

Chapter 7 : Structural Organisation in Animals

#### **UNIT III :- CELL : STRUCTURE AND FUNCTIONS**

Chapter 8 : Cell : The Unit of Life

Chapter 9 : Biomolecules

Chapter 10 : Cell Cycle and Cell Division

#### **UNIT IV :- PLANT PHYSIOLOGY**

Chapter 11 : Photosynthesis in Higher Plants

Chapter 12 : Respiration in Plants

Chapter 13 : Plant Growth and Development

#### **UNIT V :- HUMAN PHYSIOLOGY**

Chapter 14 : Breathing and Exchange of Gases

Chapter 15 : Body Fluids and Circulation

Chapter 16 : Excretory Products and their Elimination

Chapter 17 : Locomotion and Movement

Chapter 18 : Neural Control and Coordination

Chapter 19 : Chemical Coordination and Integration

## PRACTICALS

Time : 3 Hours

Marks : 20

1. Experiments and spotting
2. Record of one investigatory project and Viva based on the project
3. Class record and Viva based on experiments

### A. LIST OF EXPERIMENTS

1. Study and describe three common flowering plants (solanaceae Fabaceae and Liliaceae)
2. Preparation and study of T.S. of dicot and monocot roots and stems (normal)
3. Study of osmosis by potato osmometer
4. Study of plasmolysis in epidermal peels (eg Rhoeo leaves)
5. Study of distribution of stomata in the upper and lower surface of leaves
6. Comparative study of the rates of transpiration in the upper and lower surface of leaves
7. Test for the presence of sugar starch proteins and fats. To detect them is suitable plant and animal materials
8. Separate plant pigments through paper chromatography.
9. To study the rate of respiration in flower buds/leaf tissue and germinating seeds
10. To study effect of different temperatures on the activity of salivary amylase on starch
11. To test the presence of urea in urine.
12. To detect the presence of sugar in urine/blood sample
13. To detect the presence of albumin in urine
14. To detect the presence of bile salts in urine,

### B. STUDY I OBSERVATION OF THE FOLLOWING SPOTTING

1. Study parts of a compound microscope.
2. Study of the specimens and identification with reasons-Bacteria, Oscillatoria, Spirogyra, Rhizopus, mushroom, Yeast, liverwort, moss, fern, Pinus, one monocotyledon and one Cotyledon and one lichen.
3. Study of specimens and identification with reasons-Amoeba Hydra, Liverfluke, Ascaris, leech, earthworm, prawn, silkworm, honeybee, snail, starfish, shark, Rohu, frog, lizard, pigeon and rabbit
4. Study of tissues, and diversity in shapes and sizes of plant and animal cells (e.g. palisade cells, guard cells, parenchyma, collenchyma, sclerenchyma, Xylem, Phloem, Squamous epithelium, muscle fibers and mammalian blood smear) through temporary/permanent slides.
5. Study of mitosis in onion root tip cells and animal cells (grasshopper) from permanent slides.
6. Study of different modifications in root stem and leaves
7. Study and identify different types of inflorescences
8. Study of imbibition in seeds/ raisins
9. **Observation and comments on the experimental set up on:**
  - (a) Anaerobic respiration
  - (b) Phototropism
  - (c) Apical bud removal
  - (d) Suction due to transpiration
10. To study human skeleton and different types of joints
11. Study of external morphology of earthworm cockroach and frog through models