

HP Board Class 12 Biology Syllabus

19.BIOLOGY

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 relationship 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.

One Paper		Time: 3 Hours	60 Marks
Unit			Marks
1.	Sexual reproduction		11
2.	Genetics and evolution		17
3.	Biology and human Welfare		10
4.	Biotechnology and its applications		10
5.	Ecology and environment		12
Total			60

I. Sexual Reproduction

Pollination and Fertilization in Flowering plants.

Development of seeds and fruits.

Human reproduction: reproductive system in male and female, menstrual cycle.

Production of gametes, fertilization, implantation, embryo development, pregnancy and parturition.

II. Genetics and evolution

Mendelian inheritance.

Chromosome theory of inheritance, deviations from Mendelian ratio (gene interaction-incomplete dominance, co-dominance, complementary genes, multiple alleles).

Sex determination in human beings : XX,XY

Linkage and crossing over.

Inheritance pattern of haemophilia and blood groups in human beings.

DNA: replication, transcription, translations.

Gene expression and regulation.

Genome and human genome Project.

DNA fingerprinting.

Evolution: Theories and evidences.

III. Biology and Human Welfare

Animal Husbandry.

Basic concepts of immunology, Vaccines.

Pathogens, Parasites

Plant breeding, tissue culture, food production.

Microbes in household food processing, industrial production, sewage treatment and ENE generation.

Cancer and AIDS.

Adolescence and drug/alcohol abuse.

IV. Biotechnology and ITS Applications

Recombinant DNA technology.

Applications in Health, Agriculture and Industry

Genetically modified (GM) organisms; biosafety issues.

Insulin and Bt cotton.

V. Ecology & Environment

Ecosystem : components, types and energy flow.

Species, population and community.

Ecological adaptations.

Centers of diversity and conservation of biodiversity National Parks and sanctuaries,
Environmental issues.

PRACTICALS

Time: 3 Hours		25 Marks
1.	Two experiments	3+3=6
2.	Slide preparation	4
3.	Spotting	6
4.	Investigatory project and viva based on the project	5
5.	Record and Viva based on the experiment	4
Total		25

LIST OF EXPERIMENTS

1. Study pollen germination on a slide.
2. Collect and study soil from different sites and study them for texture and moisture content.
3. Study the pH and Water holding capacity of soil. Correlate with the kinds of plants found in them.
4. Collect water from different water bodies around you and study them for pH clarity and presence of any living organisms.
5. Study the presence of suspended particulate matter in air at the two widely different sites.
6. Study of plant population density by quadrat method.
7. Study of plant population frequency by quadrat method.

STUDY/OBSERVATION OF THE FOLLOWING (SPOTTING)

1. Study of flowers adapted to pollination by different agencies (weed, insect)
2. Study of pollen germination on a slide.
3. Study and identify stages of gamete development i.e. t.s. testis and t.s. ovary through permanent slide.
4. Study meiosis in onion bud cell or grass hopper testis through permanent slide.
5. Study of t.s. of blastula through permanent slide.
6. Study Mendelian inheritance using seeds of different colour/size of any plant.
7. Study prepared prediqree charts of genetic traits such as rolling of tongue, blood groups, widow's peak, colour blindness.

8. Exercise on controlled pollination-emasculatation, tagging and bagging.
9. To identify common diseases causing organism like Ascaris, Antamoeba, Plasmodium, ringworm. Comment of symptoms of diseases that they cause through permanent slides or specimens.
10. Study plants and animals found in xerophytic condition. Comment upon their adaptation/ecosystem.
11. Study plants and animals found in aquatic conditions. Comment upon their adaptation/ecosystem.
12. Study analogous and homologous organs in various plants and animals.

BOOKS RECOMMENDED

Biology

Published by N.C.E.R.T. New Delhi