

# Department of Botany

## Programme Outcomes

The branch of Biological science which deals with plants is called Botany. The term botany derives its origin from Greek which means herbs i.e. plants. What are the objectives for studying botany and why humans showed interest in plant life. Some are described below.

1. Our principal foods, like cereals, pulses, fruit, and others are derived from the plants.
2. Plants produce fiber. There are so many fiber yielding plants in the world. Plant fibers like cotton, jute, flax and hemp are used in clothing and other purposes.
3. Plants in the forest provide good shelter and food for their birds and wild animals.
4. There are so many algae and bacteria which can fix atmospheric nitrogen and increase soil fertility.
5. Some plants give us aesthetic pleasure which cannot be measured in terms of money. There are so many diversions in the plant kingdom.
6. From plants we get many useful things like vegetable oil, resin, rubber, medicine, dyes etc.
7. There are so many varieties of timber yielding plants from wood of those plants we make different useful furniture, boats and also bridges.
8. A civilization is running by the help of energy which we get from fossil fuels like coal, petroleum and natural gases are products of plants of past geological periods.
9. We study plants' life and their uses which help solve environmental problems like soil erosion. Trees and grasses that grow in different places help to retain water & thus prevent soil erosion.
10. Plants are with us as a friend to sustain our environment by absorbing excess CO<sub>2</sub> from the nature & releasing O<sub>2</sub> to the atmosphere & thereby keep the ecological balance. Thus they help to keep the ecological balance. Thus the human beings are now realizing the importance of plants.

## Course Outcomes

B.Sc. Part -1 (Honors in Botany)

Semester-1

Core Course – I : Microbiology & Zoology

Theory

Microbes are abundant in our world and occupy various habitats. Study of microbes' is a branch of Biology known as Microbiology. This subject covers viruses, bacteria, fungi, etc. and their economic importance.

Viruses are extremely harmful particles often designated as organisms due to their genetic material & ability to transmit genetic features to offspring. Anyway, the matter is disputable. Study of viruses includes their general features, classification, diversity, methods of multiplication, etc.

Bacteria are prokaryotic organisms having importance on earth & human life. Apart from disease-causing agents, they perform various significant roles in earth's biological chemistry. This subject covers general features of bacteria, their classification, ultra-structure of cells, mode of reproduction.

Algae are mainly aquatic organisms, also found in diverse habitats. Their ability to produce oxygen is the key for the existence of life on earth. This subject gives an idea about the diversity of algae, their classification, cellular details, etc. It also covers the life cycle of Chara, Volvox, Zygogonium, & Chlorella.

**Practical** Practical course is aimed to develop skills of students in the field of study of bacteria, & algae. They will learn how to culture bacteria in aseptic method. They will also learn staining of bacteria for visualizing under microscope. Microscope examination of bacteria from their natural habitats, like rhizoids & root nodules of leguminous plants are also included.

**Course ii : Archegoniate Theory** This subject covers 'archegoniate' a general term covering plant groups like bryophytes, pteridophytes & gymnosperms. Archegoniate are first land plants & they demonstrate various stages of evolution of land plants.

Bryophytes are a primitive group of plants without vascular tissues & for this reason they are unable to produce larger plants. But they played significant role in nature. This chapter covers diversity, features, Classification of bryophytes & also their importance. Following genera are discussed: Riccia, Marchantia, Anthoceros, Sphagnum & Funaria.

Pteridophytes are free-sporing vascular plants. Apart from their logical significance, they are now grown as ornamental plants all over the world. Increasing reports of their medicinal values also increased their importance. This chapter covers their features, diversity, classification, etc. Life cycles of following genera are covered: Lycopodium, Selaginella, Equisetum, Pteris & Marsilea along with their economic importance.

Gymnosperms or seed-bearing plants are next to evolutionary success story before angiosperms they are major component in tropical or alpine forest flora & source of timber. This chapter covers microbiology, classification, features of Gymnosperms with special emphasis on Cycas, Pinus & genetic.

**Practical** Practical covers microbiological & anatomical features of bryophytes, pteridophytes & gymnosperms from Indian species.

## Part II

### Theory

#### Paper-iv

It includes pteridophytes, Gymnosperms & palaeobotany. Pteridophytes are free-sporing vascular plants. Their diversity, general features, classification are discussed some representative genera are discussed.

Gymnosperms are seedless vascular plants. This chapter covers their general features, Classification, morphological features of various fossil and living groups of fossil plants. Types of fossils & their significances are described. History of Ranth in terms of plant evolution is a major theme of this study.

#### Paper v

**Taxonomy** is the science of Classification. Plant taxonomic study explains development of this branch of Science. It explains basis of plants Classification, schemes of Classification & typification methods.

Major tools of plant taxonomy like herbarium & herbaria are also important to understand plant diversity. Some representative families are described.

Phytogeography describes distribution of plants in different climatic zones of the globe & Principles underlying such patterns.

#### Practical

Practical gives idea about morphoanatomical features of living genera included in syllabus for pteridophytes & gymnosperms . types of fossils are also included

### Part III (Botany Honours )

#### Theory

##### Paper –VII

Includes Study of microbes ,economic botany & pharmacognogy ,Palynology ,reproductive biology & ecology microbiology or study of microrganismis decribed diversity, Classification,cercular details & economic importance of bacteria .A brief idea of viruses is Also proverted .

Economic botany & pharmacognosy deal with valuable plants of Commercial importance & medicinal Plants respectively.

Palymology described spore & potten Chversity & Various Applications Of these forms .Reproductive Biology describes events followed during formation of new plants from fevtihization to embryo stages.

Ecology deals with interaction of plants with nature & also thmeats for them . pollution is the major threats fort them . Pollution is the major threat to plants & human civilization . Ecology shows components of nature & their balance.

##### Paper-vIII

Cell Biology Shows Ultrastructural features of cell & processes operating there .Biotechnology Dealt with application of living organisms for human welfare for production of economic important products & medicines .It also operates in the field of environment.

Genetics in plains basic mechanism of transmission of genetic features through inheritance. Structure & mechanism of action of genetic materials are also included . Plant breeding is the use of genetic cal data for production of high quality plants.

##### Paper - Ix

Plant Physiology explains basic physiological mechanisms of plants like ,photosynthesis, respiration absorption of minerals ,etc.

Biochemistry explain structure & function Of bio molecules –carbohydrate, pro teri ,hight nucleri acids.

#### Practical

##### Paper –x

Practical Course includes study of features of chromo scmes of Allium cepa & rhoco sp.through cytological technigues. Microfes are studied from their natural habitats like curd & roof nodules of solanaceal

Study of pollen grains include impatiens & hibiscus .

##### Paper XI

Includes observation of some plant physiological processes in clued inc theory syllabus .biochemistry includes quantative test of biomolecules . Ecology studies include adaptive features of plants in different habitats & also their estimation .Pharmagnosy shows identifying features of some drug plants .

