

**Rajgad Dnyanpeeths**  
**Anantrao Thopte College, Bhor**  
**DEPARTMENT OF BOTANY**

**B. Sc. Botany**

**Programme Outcomes:**

**Knowledge outcomes:**

After completing B.Sc. Botany Programme students will be able to:

- PO1: demonstrate and apply the fundamental knowledge of the basic principles of major fields of biology;
- PO2: Apply knowledge to solve the issues related to plant sciences with the help of computer technology
- PO3: Apply knowledge for conservation of endemic and endangered plant species

**Skill outcomes:**

After completing B.Sc. Botany Programme students will be able to:

- PO4: collaborate effectively on team-oriented projects in the field of life sciences.
- PO5: communicate scientific information in a clear and concise manner both orally and in writing
- PO6: explain Biodiversity, climate change and plant pathology.
- PO7: apply Biotechnology, Ecology, Genetics and Plant breeding techniques in plant sciences

**Generic outcomes:**

Students will

- PO10: Have developed their critical reasoning, judgment and communication skills.
- PO11: Augment the recent developments in the field of Molecular and cell Biology, Biotechnology and relevant fields of research and development
- PO12: Enhance the scientific temper among the students so that to develop a research culture and Implementation the policies to tackle the burning issues at global and local level.

**Programme Specific Outcomes**

- PSO1: Students get acquainted with techniques which are used in plant tissue culture .
- PSO2: Students get conceptual knowledge of entrepreneurships in mushroom cultivation, Biofertilizers and Biopesticides production, plant tissue culture laboratories, Enzyme production, Fermentation, Single cell proteins etc.
- PSO3: Understand the diversity of the plants and structural organization of plants like monocots and Dicot.
- PSO4: Understand plant structures in the context of physiological and biochemical functions of plants.
- PSO5: Students will be well versed with various mechanisms of GMOs and molecular techniques.

**Course Outcomes**  
**F. Y. B.Sc. Botany**

**Course 111: plant life and utilization I**

After successfully completing this course, students will be able to:

- CO1: outline cryptogams and phanerogams.
- CO2: Define general characters of cryptogams and Phanerogams.
- CO3: Classify the members of plants groups in to cryptogams and Phanerogams.
- CO4: Describe the Life cycle of plant forms of cryptogams and Phanerogams.
- CO5: Identify lichens and their economic value.
- CO6: Discuss economic importance of algae, fungi and bryophytes.
- CO7: Demonstrate the methods of cultivation of mushrooms.

**Course 112: plant morphology and anatomy**

After successfully completing this course, students will be able to:

- CO1: Define morphology and anatomy
- CO2: Use knowledge of morphology to identify plant types and inflorescence.
- CO3: Describe plant anatomy.
- CO5: Discuss morphological and anatomical aspects of plants.
- CO6: Explain types of fruits
- CO8: differentiate between types of simple and complex tissues

**Course 113: Practical Botany -I**

After successfully completing this course, students will be able to:

- CO1: Recognize the live forms of Cryptogamic and Phanerogamic plants.
- CO2: Analyse and describe life cycle pattern of Spirogyra, Agaricus, Riccia
- CO3: Differentiate economic uses of fungi, algae, lichen for food, medicine, industry
- CO4: Explain types of tissues.
- CO5: Explain and demonstrate the Dicot and monocot plants.
- CO6: Illustrate the floral parts, fruits, leaves, inflorescence fruit and their types
- CO7: explain the mushroom cultivation

**Course 121: plant life and utilization II**

After successfully completing this course, students will be able to:

- CO1: outline pteridophytes and gymnosperms
- CO2: Define general characters of angiosperms
- CO3: Classify the members of plants groups in to Pteridophytes, gymnosperms and angiosperms.
- CO4: Describe the Life cycle of plant forms of Nephrolepis, Cycas.
- CO5: Identify and discuss their economic value of angiosperms
- CO6: Discuss economic importance of Pteridophytes and gymnosperms

**Course 122: Principles of plant science**

- CO1: define terminology related to molecular biology
- CO2: define and differentiate between physiological processes of plant.
- CO3: Describe physiological processes diffusion osmosis, plasmolysis.
- CO4: describe DNA structure and replication of DNA.
- CO5: Explain Types of chromosomes

## **S. Y. B.Sc. Botany**

### **BO 231: Taxonomy of Angiosperms and plant ecology**

After successfully completing this course, students will be able to:

- CO1: Define plant taxonomy and taxonomic related terminologies.
- CO2: Explain classification systems of angiosperms.
- CO3: Use required data sources for classification of angiosperms.
- CO4: Determine Botanical Nomenclature of angiosperm plants.
- CO5: Recognize ecological plant groups with examples.
- CO6: Explain plant families with examples.
- CO7: Apply proper herbarium methods - collecting, mounting, and keeping records.
- CO8: Execute computer knowledge in plant taxonomy and digital herbarium

### **BO 232: Plant Physiology**

After successfully completing this course, students will be able to:

- CO1: Define the terminologies: Plant water relations, Growth, Transpiration, Ascent of Sap, Plant growth regulators and Nitrogen metabolism.
- CO2: Explain processes of mineral nutrition, absorption of water, ascent of sap, mechanisms of water loss from plants.
- CO3: Demonstrate processes imbibition, Osmosis, Diffusion and Plasmolysis, measure growth by arc auxanometer.
- CO4: Describe seed dormancy and their types.
- CO5: Discuss nitrogen metabolism in plants
- CO6: Explain mechanisms and application of photoperiodism
- CO7: Explain Mechanism of vernalization and concept of flowering.
- CO8: Classify the plants based on Photoperiodism and phytohormones .

### **BO 241: Plant Anatomy and Embryology**

After successfully completing this course, students will be able to:

- CO1: Define terms related to plant Anatomy, Embryology.
- CO2: Describe various tissue systems in plants like epidermal, mechanical and vascular.
- CO3: Interpret the Principles involved in distribution of mechanical tissues.
- CO4: Explain the process of normal and abnormal secondary growth in plants.
- CO5: Differentiate between normal and abnormal secondary growth.
- CO6: Identify the process of pollination and fertilization.
- CO7: Discuss the Structure and development process of male and female gametophyte
- CO8: Illustrate the types of microspores, ovules, embryo, seed and endosperm.

### **BO 242: Plant Biotechnology**

After successfully completing this course, students will be able to:

- CO1: Define the terminologies related to plant biotechnology.
- CO2: Describe the plant tissue culture process.
- CO3: Explain single cell protein
- CO4: Interpret the production of Single cell proteins and biofertilizers.
- CO5: Illustrate the concept of phytoremediation.
- CO6: Describe General method of gene isolation from the plants and their application.
- CO7: Explain Methods of gene, transfer in plants.
- CO8: Illustrate Application of plant genetic engineering and biofuel tech.

### **BO 233: Practical Paper III**

After successfully completing this course, students will be able to:

- CO1: Define the botanical terms to identify the plant families.

CO2: Identify the plant families.

CO3: Draw the floral diagram of plants belonging to specific families.

CO4: Demonstrate physiological experiments, fermentation and fermentation products.

CO5: Calculate LPC leaf protein concentration, DPD

CO6: Describe tests for starch and protein.

CO7: Describe the transpiration under shade sunlight and wind.