Learning outcomes for Botany Undergraduate Programme B.Sc. Botany

Upon successful completion of B.Sc. Botany Under-Graduates are expected to-

PSO1: Develop a conceptual understanding of principles and importance of Botany. They will be able to demonstrate knowledge on selected topic of microbiology, cytology, and genetics, plant Biotechnology, angiosperm and be able to apply this knowledge to analyze a broad range of different phenomenon.

PSO2: Understand the nature and basic concept of Diversity of lower and higher plants, taxonomy, Anatomy, Physiology and Ecology Applied Botany, Cytogenetic and identify & classify the plant that occurs locally.

PSO3: to develop laboratory skill and be able to test soil, water, different physiological experiment. Applied course of Botany have tremendous scope in Vermicomposting, Apiculture, Floriculture.

PSO4: to demonstrate written and oral communication skills in communicating Botany – related topics and will provide and wok independently.

PSO5: to develop an understanding of the impact of botany and science on society and develop respect for conservation of environment.

B. Sc. I Semester I

Code USCBOT-T01 Contents: Plant Diversity-I

After completion of this course students will gain knowledge of -

CO1: General characteristics of Viruses and their economic importance, Bacteria, Mycoplasma, Cyanobacteria.

CO2: Life history of Algae such as-Oedogonium, Chara, Vaucheria, Ectocarpus.

CO3: Life history of Algae such as- Albugo, Mucor, Penecillium, Puccinia, etc.

CO4: Types of Lichens and Plant pathology-Viral, Fungal, Bacterial diseases.

Code USCBOT-T02 Contents: Plant Diversity-II

After completion of this course students will gain knowledge of -

CO1: Classification, General characteristic and economic importance of Bryophyta such as - Riccia, Anthocerose and Funaria.

CO2: Classification, General characteristic and economic importance of Pteridophyta such as – Rhynia, Selaginella, Equisetum, Marsilea.

CO3: Classification, General characteristic and economic importance of Gymnosperm such as – Cycas, Pinus.

CO4: Geological time scale, Fossils, types of Fossils.

Code USCBOT-P01 (Practical Work)

Contents: Plant Diversity-I & Plant Diversity-II

After completion of this course-

CO1: Student can identify different types of cyanobacteria.

CO2: Student can classify and identify the Algal and fungal genus and specimen included.

CO3: Student can make micro preparation of the material of Pteridophyta and bryophytes and identify them anatomically.

CO4: Student can make micro preparation of the material of Gymnosperm and identify them anatomically.

Semester II

Code USCBOT-T03 Contents: Plant Morphology & Anatomy

After completion of this course students will gain knowledge of -

CO1: Vegetative morphology of Angiosperm such as Root, Stem, Leaves.

CO2: Reproductive morphology of Angiosperm such as inflorescent flower and fruit types.

CO3: Apical meristem of Root & Shoot, types of tissues, Vascular Bundles, Xylem, Phloem, Cambium, Periderm.

CO4: Primary structure of -Dicot root, stem, leaf. Monocot root, stem, leaf.

Code USCBOT-T04 Contents: Taxonomy & Diversity of Angiosperms

After completion of this course students will gain knowledge of -

CO1: The Fossil Angiosperm, Botanical nomenclature.

CO2: The Classification of Angiosperms, botanical nomenclature.

CO3: Diversity of flowering plants Dicot families such as- Malvaceae,Solanaceae, Brassicaceae, Fabaceae.

CO4: Diversity of flowering plants Dicot families such as- Lamiaceae, Apocynaceae, Asteraceae.
Diversity of flowering plants Monocot families such as- Liliaceae, Poaceae, Orchidaceae.

Code USCBOT-P02 (Laboratory Work)

Contents: Plant Morphology &Anatomy & Taxonomy& Diversity of Angiosperms

After completion of this course-

CO1: Student will develop the skill and be able to prepare double stained micro preparation of the given material and identify on the basis of observation.

CO2: Students will gain the skill to identify the fossil specimen.

Semester III

Code USCBOT-T05 Contents: Reproductive Biology and development in Angiosperm

After completion of this course students will gain knowledge of -

CO1: The structure of Stamen, Pistil, Ovule, Embryo Sac, Pollination types.

CO2: Double fertilization, formation of seed, deed dormancy and strategies of seed disease cell.

CO3: The growth of development growth regulators movements in the plants.

CO4: Physiology of flowering, Phytochromes, Photoperiodism, and Senescence and abscission.

Code USCBOT-T06 Contents: Plant Biochemistry & Plant Physiology

After completion of this course students will gain knowledge of -

CO1: The structure, properties and uses of Carbohydrates, Lipids and Proteins.

CO2: Structure, properties, mechanism of Enzymes and Metabolism of Nitrogen.

CO3: Plants, Water related function of Ascent of Sap, Transpiration, Absorption and phloem transport.

CO4: Mechanism of Photosynthesis and Respiration.

Code USCBOT-P03 (Laboratory Work)

Contents: Reproductive Biology and development in Angiosperm &Plant Biochemistry and Physiology

CO1: Student will perform total Experiment in practical demonstrate/Study- Physiological and Biochemistry.

CO2: Photographs, permanent slides, herbarium sheets and other submission of the assignment given to them.

Semester IV

Code USCBOT-T07 Contents: Cell Biology, Biotechnology & Genetics

After completion of this course students will gain knowledge of -

CO1: The structure & function of cell inclusion, cell division, DNA- RNA types and their structure.

CO2: The Mendelism laws and interaction of gene and extra nuclear genome.

CO3: The linkage, crossing over, variation, mutation and structural changes in chromosome numbers.

CO4: The plant tissue culture, genetic engineering regulation of genes.

Code USCBOT-T08 Contents: Plant Ecology

After completion of this course students will gain knowledge of -

CO1: The ecological and climatic, abiotic and biotic factors

CO2: The ecosystem, biogeochemical cycle and environmental Pollution.

CO3: The autecology and synecology their characters and importance.

CO4: The plant succession and phytography.

Code USCBOT-P04 (Laboratory Work)

Contents: Cell Biology, Biotechnology & Genetics & Plant Ecology

CO1: Student will be able to conduct the laboratory exercise based on paper.

CO2: Student will perform the laboratory experiments based on paper.

Semester V (OLD) Pattern

Code USCBOT-T09 Contents: Plant Physiology & Biochemistry

After completion of this course -

CO1: Student will gain idea about plant water relation, function and mechanism of Ascent of sap, Transpiration, Phloem transport.

CO2: Student will understand the Lipid, Nitrogen metabolism, water theories of mineral absorption.

CO3: Student will know the structure, properties and use of Lipids and Carbohydrates.

CO4: Student will able to know the chemical structure of Amino acid, protein and basic enzymology.

Code USCBOT-T10 Contents: Plant Ecology

After completion of this course -

CO1: Student will able to know the ecological and climatic, abiotic and biotic factors

CO2: Students are expected to understand ecosystem, biogeochemical cycle and environmental Pollution.

CO3: Student will define the autecology and synecology their characters and importance

CO4: Student will gain the knowledge of plant succession and phytography.

Code USCBOT-P05 (Laboratory Work)

Contents: Plant Physiology & Biochemistry & Plant Ecology

After completion of this course-

CO1: Student will understand the phenomenon of Dispersion, Adsorption, and Imbibition.

Student to perform the Ascent of Sap.

Student will also understand the Plant Biochemistry experiments.

CO2: Understand the Hydorphytes, Xerophytes, Halophyte, Epiphyte, and Parasite.

Student will have developed knowledge about distribution of various plant species by quadrate Method.

Semester VI (OLD) Pattern

Code USCBOT-T11 Contents: Plant Physiology, Growth & development

After completion of this course students will be able to -

CO1: Define the process photosynthesis and types of Dark reactions.

CO2: Define the process aerobic and anaerobic respiration, glycolysis, TCA, ETS and ATP Synthesis.

CO3: know the growth and development, plant growth regulators, plant movement.

CO4: understand the concept of Photoperiodism, physiology of flowering, seed dormancy, Senescence and Abscission.

Code USCBOT-T12 Contents: Ethno Botany & applied Botany

After completion of this course -

CO1: Student will be able to understand the methodology and importance of Ethnobotany and contribution of ethnic-Societies in India.

CO2: Student will understand the importance of ethno medicinal plants and narcotics, Ethno vegetable fruit and seed for various diseases.

CO3: Student will get the knowledge of applied botany such as Agroforestry, Biofertilizer, Vermiculture, and composting.

CO4: Student will be able to understand the process of floriculture, mushroom culture, apiculture and its application in rural area.

Code USCBOT-PO6 (Laboratory Work)

Contents: Plant Physiology, Growth & development & Ethno Botany & applied Botany

CO1: Student will perform the experiment on suggested laboratory plant growth and development

CO2: Visit to see the projects working of nearby Chandrapur city.