

Seva Bharati Mahavidyalaya

Department of Botany

B.Sc. (General)

PROGRAM OUTCOMES (POs)

PO1. Understand the nature and basic concepts of biodiversity (Viruses, bacteria, algae, fungi, bryophytes, pteridophytes, lichens, mycorrhizae and gymnosperms), cell biology, genetics, molecular biology, anatomy, morphology, biochemistry, plant physiology, taxonomy and ecology of plants.

PO2. Students learn to carry out practical work in the field as well as in the laboratories, sometimes at other institutes' laboratories, gain skills and proficiency in Interpreting plant morphology and anatomy, Plant identification etc.

PO3. Identify the taxonomic position of plants, formulate the research literature and analyses the plants with substantiated conclusions using first principles and methods of nomenclature and classification in Botany. Sometimes directly related to research methodology and applied aspects like floriculture and nursery and gardening.

PO4. Identify problems and independently propose solutions using creative approaches, acquired through interdisciplinary experiences, and a depth and breadth of knowledge/expertise in the field of Plant Identification.

PO5. Demonstrate hands on skill in the experimental techniques and methods of analysis in various fields of Botany like ethnobotany, economic botany, bioinformatics, herbal technology, mushroom culture, medicinal botany etc.

COURSE OUTCOMES (COs)

B.Sc. (Core Course): Sem-I

Paper- DSC -IA & GE I: (Micro-organisms, Algae, Fungi, bryophytes, pteridophytes, lichens, mycorrhizae, gymnosperms & Plant Pathology).

On completion of the course, students are able to-

CO1. Understand the diversity among Algae, Fungi, bryophytes, pteridophytes, lichens, mycorrhizae, gymnosperms & Micro-organisms (Viruses and bacteria).

CO2. To know the systematics, classification, Morphology & Structure and life cycles of Algae, Fungi, bryophytes, pteridophytes, gymnosperms and the specific micro-organisms.

CO3. Understand the species diversity and distribution on some specific plants and microbes.

CO4. Understand the useful & harmful activities of Algae, Fungi, bryophytes, pteridophytes, gymnosperms & micro-organisms.

- CO5. Know the terminologies in plant pathology.
- CO6. Understand the scope & importance of plant pathology.
- CO7. Know the prevention & control measures of plant diseases & its effect on economy of crops.
- CO8. To know some aspects of palaeobotany and early life form.
- CO9. To know the types of fossils, its role in global economy & geological time scale. Understand the various fossil genera representing different fossil groups.

B.Sc. (Core Course): Sem-II

Paper- DSC1B & GE-II: (Plant Ecology & Taxonomy)

On completion of the course, students are able to-

- CO1. Identifying different groups of plants. Understand the plant morphology & basic Taxonomy. CO2. Understand the phylogeny of Angiosperms – a general account of the origin of Angiosperms. CO3. Understand the general range of variations in the group of Angiosperms.
- CO4. Learn the wide activities in Angiosperms & trends in classification.
- CO5. Learn about the characters of important families of Angiosperms.
- CO6. Know the floral variations in Angiosperm families, their phylogeny and evolution.
- CO7. Understand various rules, principles & recommendations of plant nomenclature produces in plant identification.
- CO8. Understand major evolutionary trends in various types of ecosystems and their role.
- CO9. Understand the concept of biotic & abiotic component.
- CO10. Analyse the Phytogeography of India.
- CO11. Evaluate the energy sources of ecological CO1. Understand the concept of biotic & abiotic component.
- CO12. Classify the soil on system.
- CO13. Assess the adaptation of plants in relation to light, temperature, water, wind & fire.
- CO14. Conduct experiment using skills appropriate to sub divisions.
- CO15. Analyze the characteristics of different plant communities.
- CO16. Examine the structure & functions of ecosystem.
- CO17. Acquiring knowledge about importance of environment. Learn about pollution, global warming & climate change.

B.Sc. (Core Course) Sem – III & for GE-IV, SEM IV

Paper –DSC 1C: (Plant Anatomy and Embryology)

On completion of the course, students are able to-

CO1. Understand the roots, stems, leaves of the Angiosperm plant and their morpho anatomy.

CO2. Know the Tissue systems of the plants.

CO3. Learn about the reproductive characteristics and embryology of the plants.

CO4. Understand the scope & importance of Anatomy.

CO5. Know various tissue systems and their abnormality, grafting parts and regimes.

CO6. Understand the normal & anomalous secondary growth in plants.

CO7. Perform the techniques in Anatomy including practical in laboratory using different instruments.

CO8. Know the methods of pollination, fertilization, Endosperm & embryogenic development.

CO9. Understand the structure & functions of anther, pistil, anther wall & pollen wall.

CO10. Evaluate the special structures of ovules.

CO11. Understand the growth & developmental process in plants.

B.Sc. (Core Course): Sem-IV & GE-IV, SEM-IV

Paper- DSC 1D: (Plant Physiology and Metabolism)

On completion of the course, students are able to-

CO1. Understand about the cell and the biochemical nature of cell.

CO2. Know the chemical nature of biomolecules.

CO3. Understand the different types of interaction in biomolecules.

CO4. Understand the structure & general features of enzymes and kinetics.

CO5. Understand the concept of enzyme activity & enzyme inhibition, feedback.

CO6. Know importance & scope of plant Physiology and relevant interdisciplinary approach.

CO7. Understand the plant & plant cells in relation to water.

CO8. Understand the process of photosynthesis in higher plants with particular emphasis on light & dark reactions, C₂, C₃ & C₄, CAM pathways.

CO9. Understand the respiration in higher plants with particular emphasis on aerobic & anaerobic respiration.

CO10. Learn about the movement of sap & absorption of water in plant body.

CO11. To know the plant growth regulators and their applications in relevant fields.

CO12. Understand the plant movements.

CO13. Understand physiological & metabolically changes happening along with the environmental impact.

CO14. Know about photoperiodism and vernalization. Applications in agriculture.

B.Sc. (Discipline Specific Elective) Sem-V

Paper- DSE 1: (Cell Biology, Genetics & Biotechnology)

On completion of the course, students are able to-

CO1. Understand cell wall, plasma membrane, cell organelles & cell division.

CO2. Understand Mendelian & Neo-Mendelian genetics.

CO3. Study the phenomenon of dominance, laws of segregation, independent assortment.

CO4. Understand the different types of genetic interaction, incomplete dominance, co-dominance, multiple alleles etc.

CO5. Understand the biochemical nature of nucleic acid, their role in living system, experimental evidences to prove DNA as a genetic material.

CO6. Understand the process of protein synthesis & role of genetic code in polypeptide formation. CO7. Understand the fundamentals of recombinant DNA technology.

CO8. Understand the principle & basic protocols for plant tissue culture.

CO9. Know about the genetic engineering.

B.Sc. Sem- V & SEM III (GE)

Paper- DSE-1 & GE III (Economic Botany and Biotechnology)

On completion of the course, students are able to –

CO1. Understand the concept of economic Botany & relate with environment, communities & ecosystem.

CO2. To develop critical understanding the origin of cultivated crop and Vavilov's centre of origine concept.

CO3. Increase the awareness & appreciation of plants & plant products encountered in everyday life. CO4. To know different types of cultivated crop's origin, their morphological aspects and daily uses.

CO5. Understand the techniques of tissue culture, anther culture, endosperm culture and its applications.

CO6 To know about the recombinant DNA technology, techniques like blotting, finger printing, molecular DNA marker, sequencing, PCR, reverse transcriptase, hybridoma and monoclonal antibodies, ELIS and immune detection.

B.Sc. Sem- VI

Paper: DSE-2: Genetics and Plant Breeding

On completion of the course, students are able to know –

CO1. Understand the concept of Genetics and Plant breeding.

CO2: Brief history of Mendel and law of inheritance.

CO3: Mendel's modification: lethal genes, co-dominance, incomplete dominance, chi square test etc.

CO4: Pedigree analysis, cytoplasmic inheritance, multiple allelism.

CO5: About the pleiotropism.

CO6: About the Chromosomal theory of inheritance.

CO7: About the Sex determination and sex -linked inheritance

CO8: About Linkage and crossing over and their concepts.

CO9: About the types of mutations and chromosomal aberrations.

CO10: about plant breeding, methods of crop improvement, inbreeding depression and heterosis.

CO11: About quantitative inheritance and crop improvement.

B.Sc. Sem- VI

Paper: DSE-2: Or, Research Methodology

On completion of the course, students are able to-

CO1: Understand the basic concept of research.

CO2: know the general laboratory practices of research.

CO3: understand regarding methods of data collection, and documentation of observations.

CO4: know overview of biological problems, plant micro-techniques including staining.

CO5: know about methods of study of plant cell and tissue structure.

CO6: enhance the art of scientific writing and their presentation.

CO7: work on Photography, PPT preparation, banner and flyer making etc.

CO8: know about research ethics, copy right, plagiarism and academic misconduct.

B.Sc. Sem- III: Skill Enhancement Course (SEC)

Paper: SEC 1: Biofertilizers

On completion of the course, students are able to-

- CO1. Recall various types of biofertilizers.
- CO2. Demonstrate various types of biofertilizers production technologies.
- CO3. Examine various types of biofertilizers, and organic farming.
- CO4. To know about the value of economic factors associated with biofertilizer production.
- CO5. Devise new methods and strategies including application of biofertilizers in field.

B.Sc. Sem- IV: Skill Enhancement Course (SEC)

Paper: SEC 2: Mushroom culture

On completion of the course, students are able to-

- CO1. Recall various types & categories of mushroom.
- CO2. Demonstrate various types of mushroom cultivating technologies.
- CO3. Examine various types of food technologies mushroom cultivation.
- CO4. Value the economic factors associated with mushroom cultivation.
- CO5. Devise new methods & strategies to contribute to mushroom production.

B.Sc. Sem- V: Skill Enhancement Course (SEC)

Paper: SEC 3: Ethnobotany

On completion of the course, students are able to-

- CO1. Conceptualize Ethnobotany as an interdisciplinary subject of study.
- CO2. Restate the established methodology of Ethnobotany research and extension.
- CO3. Categories various indigenous ethnic groups & their environmental practices.
- CO4. Understand the legalities associated with Ethnobotany.
- CO5: know about different ethnomedicinal plants and their uses.
- CO6: Role of ethnobotany and modern medicines.