

U.G. Program outcome (PO)

The teacher enables the student to

- PO₁- Introduce concept of breadth and depth in learning.
- PO₂- Produce competent plant biologist to implement their gained knowledge in basic and applied aspects.
- PO₃- Critical thinking, development of scientific attitude, problem solving skill, improve practical skill, enhance communication skill, social interaction and increase awareness about use of plant resource by knowing their ethical values.
- PO₄- The training provided to students make them competent for doing jobs in government and private sectors of academia, research and industry.
- PO₅- Develop shelf entrepreneurship and shelf employability.
- PO₆- Lifelong learning achieved by drawing attention to the vast knowledge of plants and their domestication.

Program specific outcome (PSO)

- PSO₁- Understanding nature and concept of microorganisms, all plant groups, their metabolism, components at molecular level, biochemistry, taxonomy and ecology.
- PSO₂- Course will make students aware of natural resources and environment and importance of conserving it.
- PSO₃- Hands on training develop practical skill, equipment handling, and interpretation of biological materials.
- PSO₄- Theory and practical based knowledge develop technical personnel in different fields such as genetics, cell and molecular biology, plant systematic and biotechnology.
- PSO₅- Inculcate strong fundamentals on classical and modern aspect of Botany which is essential for pursuit of many applied sciences. It will facilitate students for taking up and shaping a successful career in Botany and allied sciences.
- PSO₆- Make students able to employed with educational institutions, government or public sectors or companies such as genetic research, agriculture and forestry, plant resource laboratory, environmental protection, drugs, chemical biotechnology, plant health inspection services.
- PSO₇- Introduction of research project will inculcate research aptitude and passion for higher education and scientific research.

Program name	Semester	Name of the Paper	Course outcome	Program Specific Outcomes	Program Outcomes
B.Sc. in Botany	1	Microbiology and Plant Pathology	<ol style="list-style-type: none"> 1. Develop understanding about the classification and diversity of different microbes including viruses, Algae, Fungi & Lichens & their economic importance. 2. Develop conceptual skill about identifying microbes, pathogens, biofertilizers & lichens. 3. Gain knowledge about developing commercial enterprise of microbial products. 4. Learn host-pathogen relationship and disease management. 5. Learn Presentation skills (oral & writing) in life sciences by usage of computer of computer & multimedia 6. Gain Knowledge about uses of microbes in various fields. 7. Understand the structure and reproduction of certain selected bacteria algae, fungi and lichens. 8. Gain Knowledge about the economic values of this lower group of plant community 	PO ₁ PO ₂ PO ₃ PO ₆	PSO ₁ PSO ₂ PSO ₄ PSO ₅ PSO ₆
B.Sc. in Botany	1	Techniques in Microbiology and Plant Pathology	<ol style="list-style-type: none"> 1. Understand the instruments, techniques, lab etiquettes and good lab practices for working in a microbiology laboratory. 2. Develop skills for identifying microbes and using them for Industrial, Agriculture and Environment purposes. 3. Practical skills in the field and laboratory experiments in Microbiology & Pathology. 4. learn to identify Algae, Lichens and plant pathogens along with their Symbiotic and Parasitic associations. 5. Can initiate his own Plant & Seed Diagnostic Clinic 6. Can start own enterprise on microbial products 	PO ₁ PO ₂ PO ₃ PO ₄ PO ₅ PO ₆	PSO ₃ PSO ₄ PSO ₅ PSO ₆
B.Sc. in Botany	2	Archegonates and	<ol style="list-style-type: none"> 1. Develop critical understanding on morphology, anatomy and reproduction of Bryophytes, Pteridophytes 	PO ₁ PO ₂	PSO ₁ PSO ₂

		Plant Architect ure	and Gymnosperms 2. Understanding of plant evolution and their transition to land habitat. 3. Understand morphology, anatomy, reproduction and developmental changes therein through typological study and create a knowledge base in understanding the basis of plant diversity, economic values & taxonomy of plants 4. Understand the details of external and internal structures of flowering plants	PO ₃ PO ₆	PSO ₄ PSO ₅ PSO ₆
B.Sc. in Botany	2	Land Plant Architect ure	1. The students will be made aware of the group of plants that have given rise to land habit and the flowering plants. Through field study they will be able to see these plants grow in nature and become familiar with the biodiversity. 2. Students would learn to create their small digital reports where they can capture the zoomed in and zoomed out pictures as well as videos in case they are able to find some rare structure or phenomenon related to these plants. 3. Develop an understanding by observation and table study of representative members of phylogenetically important groups to learn the process of evolution in a broad sense. 4. Understand morphology, anatomy, reproduction and developmental changes therein through typological study and create a knowledge base in understanding plant diversity, economic values & taxonomy of lower group of plants 5. Understand the composition, modifications, internal structure & architecture of flowering plants for becoming a Botanist.	PO ₁ PO ₂ PO ₃ PO ₄ PO ₅ PO ₆	PSO ₃ PSO ₄ PSO ₅ PSO ₆
B.Sc. in Botany	3	Flowering plants identification and aesthetic	1. To gain an understanding of the history and concepts underlying various approaches to plant taxonomy and classification. 2. To learn the major patterns of diversity among plants, and the characters and types of data used to classify	PO ₁ PO ₂ PO ₃ PO ₆	PSO ₁ PSO ₂ PSO ₄ PSO ₅ PSO ₆

B.Sc. in Botany	3	Plant identification technology	<p>plants.</p> <p>3. To compare the different approaches to classification with regard to the analysis of data.</p> <p>4. To become familiar with major taxa and their identifying characteristics, and to develop in depth knowledge of the current taxonomy of a major plant family.</p> <p>5. To discover and use diverse taxonomic resources, reference materials, herbarium collections, publications.</p> <p>6. For the entrepreneur career in plants, one can establish a nursery. Start a landscaping business, Set up a farm Or Run a plantation consultancy firm</p> <p>1. To learn how plant specimens are collected, documented, and curated for a permanent record.</p> <p>2. To observe, record, and employ plant morphological variation and the accompanying descriptive terminology.</p> <p>3. To gain experience with the various tools and means available to identify plants.</p> <p>4. To develop observational skills and field experience.</p> <p>5. To identify a taxonomically diverse array of native plants.</p> <p>6. To recognize common and major plant families.</p> <p>7. To Understand aesthetic characters of flowering plants by making-landscapes, gardens, bonsai, miniatures</p> <p>8. Comprehend the concepts of plant taxonomy and classification of Angiosperms.</p>	<p>PO1</p> <p>PO2</p> <p>PO3</p> <p>PO4</p> <p>PO5</p> <p>PO6</p>	<p>PSO3</p> <p>PSO4</p> <p>PSO5</p> <p>PSO6</p>
B.Sc. in Botany	4	Economic botany, ethnomedicine and phytochemistry	<p>1. Understand about the uses of plants –will know one plant-one employment.</p> <p>2. Understand phytochemical analysis related to medicinally important plants and economic products produced by the plants.</p> <p>3. Know about the importance of Medicinal plants and its useful parts, economically important plants in our daily</p>	<p>PO1</p> <p>PO2</p> <p>PO3</p> <p>PO6</p>	<p>PSO1</p> <p>PSO2</p> <p>PSO4</p> <p>PSO5</p> <p>PSO6</p>

			life and also about the traditional medicines and herbs, and its relevance in modern times.		
B.Sc. in Botany	4	Commercial Botany & Phytochemical Analysis	<ol style="list-style-type: none"> 1. Know about the commercial products produced from plants. 2. Gain the knowledge about cultivation practices of some economic crops. 3. Understand about the ethnobotanical details of plants. 4. Learn about the chemistry of plants & herbal preparations 5. Can become a protected cultivator, aromatic oil producer, Pharmacologist or quality analyst in drug company 	PO1 PO2 PO3 PO4 PO5 PO6	PSO3 PSO4 PSO5 PSO6
B.Sc. in Botany	5	Plant Physiology, Metabolism & Biochemistry	<ol style="list-style-type: none"> 1. Understand the role of Physiological and metabolic processes for plant growth and development. 2. Learn the symptoms of Mineral Deficiency in crops and their management. 3. Assimilate Knowledge about Biochemical constitution of plant diversity. 4. Know the role of plants in development of natural products, nutraceuticals, dietary supplements, antioxidants 	PO1 PO2 PO3 PO6	PSO1 PSO2 PSO4 PSO5 PSO6
B.Sc. in Botany	5	Molecular Biology & Bioinformatics	<ol style="list-style-type: none"> 1. Understand nucleic acids, organization of DNA in prokaryotes and Eukaryotes, DNA replication mechanism, genetic code and transcription process. 2. Know about Processing and modification of RNA and translation process, function and regulation of expression. 3. Gain working knowledge of the practical and theoretical concepts of bioinformatics 	PO1 PO2 PO3 PO6	PSO1 PSO2 PSO4 PSO5 PSO6
B.Sc. in Botany	5	Experiments in physiology, Biochemistry &	<ol style="list-style-type: none"> 1. Know and authentic the physiological processes undergoing in plants along with their metabolism 2. Identify Mineral deficiencies based on visual symptoms 3. Understand and develop skill for conducting molecular experiments for genetic engineering 	PO1 PO2 PO3 PO4 PO5 PO6	PSO3 PSO4 PSO5 PSO6

		molecular biology		
B.Sc. in Botany	5	*Project-I	<p>1. Project work will supplement field experimental learning and deviations from classroom and laboratory transactions.</p> <p>2. Project work will enhance the capability to apply gained knowledge and understanding for selecting, solving and decision-making processes.</p> <p>3. It will promote creativity and the spirit of enquiry in learners. They will learn to consult Scientists, libraries, laboratories and herbariums and learn importance of discussions, Botanical & field trips, print and electronic media, internet etc. along with data documentation, compilation, analysis & representation in form of dissertation writing. 4. It will enhance their abilities, enthusiasm, and interest.</p>	<p>PO1</p> <p>PO2</p> <p>PO3</p> <p>PO4</p> <p>PO5</p> <p>PO6</p> <p>PSO3</p> <p>PSO4</p> <p>PSO5</p> <p>PSO6</p> <p>PSO7</p>
B.Sc. in Botany	6	Cytogenetics, Plant Breeding & Nanotechnology	<p>1. Acquire knowledge on ultrastructure of cell.</p> <p>2. Understand the structure and chemical composition of chromatin and concept of cell division.</p> <p>3. Interpret the Mendel's principles, acquire knowledge on cytoplasmic inheritance and sex linked inheritance.</p> <p>4. Understand the concept of 'one gene one enzyme hypothesis' along with molecular mechanism of mutation.</p> <p>5. Interpret the concept of Lemarkism, Neo Lemarkism, Darwinism and also understand the concept of natural selection.</p>	<p>PO1</p> <p>PO2</p> <p>PO3</p> <p>PO6</p> <p>PSO1</p> <p>PSO2</p> <p>PSO4</p> <p>PSO5</p> <p>PSO6</p>
B.Sc. in Botany	6	Ecology & Environment	<p>1. Acquaint the students with complex interrelationship between organisms and environment;</p> <p>2. Make them understand methods for studying vegetation, community patterns and processes, ecosystem functions, and principles of phytogeography.</p> <p>3. This knowledge is critical in evolving strategies for sustainable natural resource management and biodiversity</p>	<p>PO1</p> <p>PO2</p> <p>PO3</p> <p>PO6</p> <p>PSO1</p> <p>PSO2</p> <p>PSO4</p> <p>PSO5</p> <p>PSO6</p>

B.Sc. in Botany	6	Cytogenetics, Conservation & Environment management	conservation. 1. Students are able to perform all experiments related to the semester-i.e. Plant tissue cultured plants, conducting breeding on field, conserving and depolluting the environment. 2. Can be employed in environment impact assessment companies & start his own venture	PO1 PO2 PO3 PO4 PO5 PO6	PSO3 PSO4 PSO5 PSO6
B.Sc. in Botany	6	*Project-II	1. Project work will supplement field experimental learning and deviations from classroom and laboratory transactions. 2. Project work will enhance the capability to apply gained knowledge and understanding for selecting, solving and decision-making processes. 3. It will promote creativity and the spirit of enquiry in learners. They will learn to consult Scientists, libraries, laboratories and herbariums and learn importance of discussions, Botanical & field trips, print and electronic media, internet etc. along with data documentation, compilation, analysis & representation in form of dissertation writing. 4. It will enhance their abilities, enthusiasm, and interest.	PO1 PO2 PO3 PO4 PO5 PO6	PSO3 PSO4 PSO5 PSO6 PSO7

Head of the Department

Convenor Learning Outcome Committee

Dr. 23/8/23

Principal
प्राचार्य

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