

SHRI LAL BAHADUR SHASTRI DEGREE COLLEGE
GONDA
DEPARTMENT OF BOTANY



B.Sc. Botany
Course Outcome

DEPARTMENT OF BOTANY

Sri Lal Bahadur Shastri Degree College, Gonda-271003

PROGRAMME OUTCOMES (POS):

Transformed curriculum shall develop educated outcome-oriented candidature, fostered with discovery learning, equipped with practice & skills to deal practical problems and versed with recent pedagogical trends in education including e-learning, flipped class and hybrid learning to develop into responsible citizen for nation-building and transforming the country towards the future with their knowledge gained in the field of plant science.

- CBCS syllabus with a combination of general and specialized education shall introduce the concepts of breadth and depth in learning.
- Shall produce competent plant biologists who can employ and implement their gained knowledge in basic and applied aspects that will profoundly influence the prevailing paradigm of agriculture, industry, healthcare and environment to provide sustainable development.
- Will increase the ability of critical thinking, development of scientific attitude, handling of problems and generating solutions, improve practical skills, enhance communication skill, social interaction, increase awareness in judicious use of plant resources by recognizing the ethical value system.
- The training provided to the students will make them competent enough for doing jobs in Govt. and private sectors of academia, research and industry along with graduate preparation for national as well as international competitive examinations, especially UGC-CSIR NET, UPSC Civil Services Examination, IFS, NSC, FCI, BSI, FRI etc.
- Certificate and diploma courses are framed to generate self- entrepreneurship and self-employability, if multi exit option is opted.
- Lifelong learning be achieved by drawing attention to the vast world of knowledge of plants and their domestication.

B.Sc I Year PROGRAMME SPECIFIC OUTCOMES (PSOS):
CERTIFICATE COURSE IN MICROBIAL TECHNOLOGY & CLASSICAL BOTANY.

This Programme imparts knowledge on various fields of plant biology through teaching, interactions and practical classes. It shall maintain a balance between the traditional botany and modern science for shifting it towards the frontier areas of plant sciences with applied approach. This syllabus has been drafted to enable the learners to prepare them for self-entrepreneurship and employment in various fields including academics as well as competitive exams. Students would gain wide knowledge in following aspects:

1. Diversity of plants and microbes, their habitat, morphology, architecture and reproduction.
2. Plant disease causing microbes, symptoms & control.
3. Economic value of plants and their use in Human Welfare.

B.Sc II Year PROGRAMME SPECIFIC OUTCOMES (PSOS):
DIPLOMA IN PLANT IDENTIFICATION, UTILIZATION AND ETHNOMEDICINE.

This course provides a broad understanding of identifying, growing and using plants. This course is primarily aimed to introduce people to the richness of plant diversity found in surrounding areas. Lecture sessions are designed to cover fundamental topics concerning classification of plants and their utilization required for understanding the flora and vegetation. Practical sessions are organized following theory for easy understanding of the various parts of the plants, structural organization of floral parts and diversity therein. Participants are taken to different locations covering a variety of habitats and forest types to acquaint them with the native flora, in the long run, will contribute towards building momentum for people's participation in environmental conservation without compromising on academic rigor and our rich wealth of knowledge inherited over generations.

1. The course will cover conventional topics in Field Botany like Evolutionary History & Diversity of plants, Complete Morphology, Nomenclature of plants, Systems of Classification, Keys to important Families of Flowering Plants, Field Data Collection & Herbarium Techniques.
2. The course is designed to become a commercial crop grower, florist, protected cultivator, green belt plant advisor to industries, pharmacologist & taxonomist.

B.Sc III Year PROGRAMME SPECIFIC OUTCOMES (PSOS): **BACHELOR OF SCIENCE.**

The learning outcomes of a three years graduation course are aligned with programme learning outcomes but these are specific to-specific courses offered in a program. The core courses shall be the backbone of this framework whereas discipline electives, generic electives and skill enhancement courses would add academic excellence in the subject together with a multi-dimensional and multidisciplinary approach.

1. Understanding of plant classification systematics, evolution, ecology, developmental biology, physiology, biochemistry, plant interactions with microbes and insects, morphology, anatomy, reproduction, genetics and molecular biology of various life-forms.
2. This course is suitable to produce expertise in conservation biology like ex-situ conservation, response to habitat change, genotype characterization and reproductive biology.
3. Understanding of various analytical techniques of plant sciences, use of plants as industrial resources or as a human livelihood support system and is well versed with the use of transgenic technologies for basic and applied research in plants.
4. Understanding of various life forms of plants, morphology, anatomy, reproduction, genetics, microbiology, molecular biology, recombinant DNA technology, transgenic technology and use of bioinformatics tools and databases and the application of statistics to biological data.
5. Entrepreneurship Skill Development, Understand the issues of environmental contexts and sustainable development, Inculcation of human values.
6. Strengthen mathematical and computational skills. Enable students to use ICT and AI effectively.
7. Develop good skills in the laboratory such as observation and evaluation by the use of modern tools and technology.
 - Understanding the nature and basic concepts of all the plant groups, their metabolism, components at the molecular level, biochemistry, taxonomy and ecology. The course will make them aware of natural resources and the environment and the importance of conserving it. Hands-on training in various fields will develop practical skills, handling equipment and laboratory use along with collection and interpretation of biological materials and data. Knowledge gained through theoretical and lab-based experiments will generate technical personnel in various priority areas such as genetics, cell and molecular biology, plant systematics and biotechnology.
 - Botanists are able to contribute to all these fields and therefore, are mainly employed with educational institutions, government or public sectors or companies in industries, such as agriculture or forestry, oil, chemical, biotechnology, geological survey, environmental protection, drugs, genetic research, plant resources laboratories, plant health inspection services, lumber and paper, food, fermentation, nursery, fruit and so on. Jobs available as a botanist: •Microbiologist, plant pathologist, Taxonomist • Plant

Physiologist • Plant Biochemist • Researcher • Mycologist • Ecologist • Weed Scientist • Palaeobotanist • Conservationist • Fruit Grower • Morphologist • Cytologist • Ethnobotanist • Plant geneticists etc.

- Inculcate strong fundamentals on modern and classical aspects of Botany, understand knowledge of Botany is an essential pre-requisite for the pursuit of many applied sciences. It will facilitate students for taking up and shaping a successful career in Botany and allied sciences.
- Introduction of research project will inculcate research aptitude and passion for higher education and scientific research.

COURSE OUTCOMES:

After the completion of the course the students will be able to:

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 & 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.
9. Develop critical understanding on morphology, anatomy and reproduction of Bryophytes, Pteridophytes and Gymnosperms.
10. Understanding of plant evolution and their transition to land habitat.
11. 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.
12. Understand the details of external and internal structures of flowering plants.
13. To gain an understanding of the history and concepts underlying various approaches to plant taxonomy and classification.
14. To learn the major patterns of diversity among plants, and the characters and types of data used to classify plants.
15. To compare the different approaches to classification with regard to the analysis of data.
16. 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.

17. To discover and use diverse taxonomic resources, reference materials, herbarium collections, publications.
18. 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.
19. Understand about the uses of plants –will know one plant-one employments
20. Understand phytochemical analysis related to medicinally important plants and economic products produced by the plants.
21. Know about the importance of Medicinal plants and its useful parts, economically important plants in our daily life and also about the traditional medicines and herbs, and its relevance in modern times.
22. Understand the role of Physiological and metabolic processes for plant growth and development.
23. Learn the symptoms of Mineral Deficiency in crops and their management.
24. Assimilate Knowledge about Biochemical constitution of plant diversity.
25. Know the role of plants in development of natural products, nutraceuticals, dietary supplements, antioxidants.
26. Understand nucleic acids, organization of DNA in prokaryotes and Eukaryotes, DNA replication mechanism, genetic code and transcription process.
27. Know about Processing and modification of RNA and translation process, function and regulation of expression.
28. Gain working knowledge of the practical and theoretical concepts of bioinformatics.
29. Acquire knowledge on cell ultrastructure.
30. Understand the structure and chemical composition of chromatin and concept of cell division.
31. Interpret the Mendel's principles, acquire knowledge on cytoplasmic inheritance and sex-linked inheritance.
32. Understand the concept of 'one gene one enzyme hypothesis' along with the molecular mechanism of mutation.
33. Acquaint the students with complex interrelationship between organisms and environment.
34. Make them understand methods for studying vegetation, community patterns and processes, ecosystem functions, and principles of phytogeography.
35. This knowledge is critical in evolving strategies for sustainable natural resource management and biodiversity conservation.



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