**Programme Educational Objectives (PEOs) for B.Sc. BZC**

Upon successful completion of the B.Sc. BZC program, graduates will be able to:

- **Foundational Knowledge and Critical Thinking:** Apply comprehensive knowledge of fundamental theories, concepts, and principles in Botany, Zoology, and Chemistry to critically analyze and solve problems in biological and chemical sciences.
- **Professional Competence and Skill Development:** Demonstrate practical skills in laboratory techniques, experimentation, and scientific instrumentation relevant to the fields of life sciences and chemical sciences, fostering competency for diverse professional roles.
- **Higher Education and Research Aptitude:** Pursue higher education, research, and advanced studies in Botany, Zoology, Chemistry, Biotechnology, Environmental Science, or allied interdisciplinary fields, contributing to scientific advancements.
- **Societal Impact and Ethical Responsibility:** Understand the societal, environmental, and ethical implications of scientific advancements in their respective fields, promoting responsible practices and contributing to sustainable development and human well-being.
- **Communication and Lifelong Learning:** Communicate scientific information effectively, both orally and in writing, and engage in continuous learning and professional development to adapt to evolving scientific and technological landscapes.
- **Entrepreneurial and Employability Skills:** Acquire skills relevant for employability in various sectors, including research and development, pharmaceutical, agriculture, environmental consultancy, and food industries, or to explore entrepreneurial ventures in related areas.

**Program Objectives (PO's)**

- The Biological Sciences undergraduate degree program aims to diversely train the students, enabling graduates to pursue career or advanced degrees in life, health sciences, research, education, industry, or governmental work.
- To master a broad set of biological and chemical knowledge concerning the fundamentals in these areas.
- To develop a plan for professional growth and development.

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**Programme Outcomes: (PO's)**

- **PO 1:** Ability to build a strong foundation of knowledge in different disciplines of their study.
- **PO 2:** Successfully perceive their career objectives in advanced education in professional in a scientific career in a government or industry.
- **PO 3:** Ability to collaborate with others from different disciplines in the recognition that multidisciplinary approaches are necessary to address the major issues facing society.
- **PO 4:** To develop an attitude for working effectively and efficiently in any competitive environment.
- **PO 5:** Professional growth and development in independent learning and creativity.
- **PO 6:** Ability to inculcate the Time Management, Work discipline and Skill in the students to strengthen their minds.
- **PO 7:** Participation in various activities to strengthen in Academic and also in other programmes.

**Program Specific Outcome : (PSO's)**

- **PSO 1:** Apply the broad knowledge of science across a range of field, in at least one area of study, while demonstrating and understanding the local and global contexts in which science is practiced.
- **PSO 2:** To apply the appropriate methods of research, investigation and design, to solve problems in science, Botany, Zoology, Chemistry.
- **PSO 3:** To articulate the relationship between different science communities of practice, the international scope of science, and the contributions to their development that have been made by people with diverse perspectives, cultures and backgrounds;
- **PSO 4:** To evaluate the role of science, in current issues facing local and global communities.
- **PSO 5:** B.Sc graduates can opt to join a postgraduate level degree programme in their respective field or subject to pursue further studies.
- **PSO 6:** After completing B.Sc. degree one can get employed in different sectors in addition to scientific sectors, and seek out for career in Government corporations, banking and finance etc.
- **PSO 7:** Life Science Graduates can also find jobs in IT industry, Business, BPO, Marketing, Technical writing etc.

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**B.Sc (BZC) Botany - I Year**

**Semester - I: Paper - I - Microbial Diversity and Early Land Plants**

## Course Objectives

- Understand the diverse characteristics, structures, and significance of major microbial forms (Archaebacteria, Actinomycetes, Mycoplasma, Viruses, and Bacteria), including their roles in plant diseases.
- Explain the general characteristics, classification, and life cycles of Algae and Cyanobacteria, recognizing their ecological and economic importance.
- Analyze the classification, structure, reproduction, and economic importance of various Fungi and Lichens.
- Describe the structure, reproduction, life cycles, and systematic position of Bryophytes and Pteridophytes, noting their evolutionary advancements.

## Course Outcomes

- Identify key features of Archaebacteria, Actinomycetes, Mycoplasma, Viruses, and Bacteria, and outline control strategies for associated plant diseases.
- Classify Algae using Fritsch's system and summarize the unique aspects and ecological roles of Cyanobacteria.
- Apply Ainsworth's system to categorize Fungi, and illustrate the life cycles of representative members while recognizing the economic uses of Lichens.
- Bryophytes and Pteridophytes based on their morphological, anatomical, and reproductive features, and demonstrate basic laboratory techniques for studying these and other microbial/plant taxa.

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**Semester - II: Paper II**

**Gymnosperms, Anatomy and Embryology of Angiosperms**

**Course Objectives**

- Analyze the distribution, structural characteristics, and classification systems of Gymnosperms, along with the fundamental principles of Palaeobotany and fossilization.
- Explain the histological organization of various meristems, the properties of different plant tissue systems, and the internal anatomy of leaves.
- Evaluate the processes of normal and anomalous secondary growth in plant stems and roots, and discern the unique anatomical features of specific local timbers.
- Synthesize the complex stages of sexual reproduction in Angiosperms, encompassing gametophyte development, pollination, fertilization, and post-fertilization events like embryo and endosperm formation.
-

**Course Outcomes**

- Classify major groups of Gymnosperms according to their characteristic features and identify different types of fossils based on their formation and significance.
- Differentiate between various meristematic tissues, simple, complex, and special tissue systems, and interpret the internal structural variations observed in monocot and dicot leaves.
- Illustrate the cellular and tissue-level changes during normal and anomalous secondary growth, and recognize the distinguishing anatomical features of specified economic timbers.
- Describe in detail the sequential events of microsporogenesis, megasporogenesis, pollen-pistil interaction, and the development of the Angiosperm embryo and endosperm.

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