GDC Memorial College, Bahal (Bhiwani)

NAAC Accredited Grade "B" (Second Cycle) and Recognized under the Sections 2(f) & 12B of the UGC Act, 1956
Affiliated to Ch. Bansi Lal University, Bhiwani

Department of Life Sciences (2025-26)

Program Learning Outcomes (PLOs)

Life Sciences curriculum is designed to equip students with subject domain knowledge and technical skills pertaining to science in a holistic manner. It aims to train the students in all the areas of sciences with interdisciplinary components. Students have exposure to cutting-edge technologies that are currently used in the subject. They are made aware about the social and environmental issues, significance of plants and their relevance to the national economy.

PLO1. To develop skills in graduate students to be able to acquire theoretical and practical knowledge in fundamentals of biology in respective disciplines of plants, animals, microbes and environment.

PLO2. Think logically and organize tasks into a structured form.

PLO3. . To inculcate ability to critically evaluate problems and apply lateral thinking and analytical skills for professional development.

PLO4. Use of IT (word-processing, use of internet, statistical packages and databases). Communication of scientific ideas in writing and orally. Ability to work as part of a team. Ability to use library resources.

PLO5. Apply the knowledge of basic science, life sciences and fundamental process of plants to study and analyze any plant form.

PLO6. Transfer of appropriate knowledge and methods from one topic to another within the subject.

PLO7. Assimilate knowledge and ideas based on wide reading and through the internet.

PLO8. Understand the impact of the plant diversity in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PLO9. Apply ethical principles and commit to environmental ethics and responsibilities and norms of the biodiversity conservation.

Program Specific Learning Outcomes (PSLOs)

Students who successfully complete this course will be able to:

PSLO1: Understand and analyze fundamental biological concepts while merging perspectives from several domains related to modern biology**.**

PSLO2: Expand professional studies and research in disciplines such as neurology, genetics, cell biology, physiology, biochemistry, immunology, developmental biology, ecology, and biotechnology.

PSLO3: Understand and apply information from a variety of scientific resources; assess and interpret graphical data; develop reliable hypotheses, plan experiments, and observational techniques in a laboratory setting; demonstrate problem-solving abilities; and present results from science in verbal and written form.

PSLO4: Demonstrate expertise in scientific subjects such as biostatistics, bioinformatics, and analytical procedures required for productive biological research; understand biotechnological processes utilized in business; and anticipate need-based entrepreneurial opportunities in all areas of biology.

PSLO5: Engage as a team, establish interpersonal communication skills, and get the confidence to pursue a career in any field of choice.

B.Sc. (Life Sciences) 1st Sem

Subject: Diversity of Microbes, Algae, Fungi and Archegoniates **Subject Code:** 24UN-BOT-101

Course Learning Outcomes (CLOs)

The specific objectives of this course are to expose students to the following topics:

CLO1: Characteristics of bacteria, actinobacteria, viruses and fungi,
CLO2: Students will develop a conceptual understanding of Phycology.
CLO3: Students will gain knowledge on the concepts of Bryology.
CLO4: Basic understanding of the biology of pteridophytes will be developed by the students.
CLO5: Students will gain the knowledge of practical aspects of microorganisms, algae, fungi, lichens, bryophytes.

B.Sc. (Life Sciences) 2nd Sem

Subject: Cell Biology and Genetics **Subject Code: 24UN-**BOT-201

Course Learning Outcomes (CLOs)

The specific objectives of this course are to expose students to the following topics:

CLO1: Students will acquire the knowledge of cell envelope and organelles.
CLO2: Students will acquire knowledge shout cell cycles and chromosomal abnormalities.
CLO3: Students will acquire knowledge about genetic inheritance.
CLO4: Students will develop an understanding of extra chromosomal inheritance.
CLO5: Students will acquire the detail knowledge of cell, cell structure and also about principles, mechanisms, and applications of genetics, and to prepare them for further study or careers in genetics.

B.Sc. (Life Sciences) 3rd Sem

Subject: Gymnosperms and Plant Anatomy **Subject Code:** 24UN-BOT-301

Course Learning Outcomes (CLOs)

The specific objectives of this course are to expose students to the following topics:

CLO1: Students will gain knowledge of general characteristics of gymnosperms.
CLO2: Students will gain knowledge about comparison between gymnosperms and economic importance.
CLO3: Students will gain an understanding of various kind of tissue system in plants and secondary growth.
CLO4: Students will acquire knowledge about leaf and root, morphology and anatomy.
CLO5: Students will gain the knowledge of practical aspects of gymnosperms and plant anatomy.

B.Sc. (Life Sciences) 4th Sem

Subject: Plant Systematic and Embryology **Subject Code:** 24UN-BOT-401

Course Learning Outcomes (CLO)

The specific objectives of this course are to expose students to the following topics:

CLO1: Students will gain knowledge about taxonomy, including the rules of nomenclature and other essential aspects
CLO2: Students will acquire a conceptual understanding of angiosperm classification systems and the diversity of families within them.
CLO3: Students will acquire knowledge about structural organization of flower and pollination.
CLO4: Students will develop an understanding of fertilization, embryo and endosperm development.
CLO5: Students will acquire the knowledge of experimentation performed for Plant Systematic and Embryology**.**

B.Sc. (Medical) 5th Sem

Subject: Economic Botany and Biotechnology-I **Subject Code:** 20UBOT501A

Course Learning Outcomes (CLOs)

The specific objectives of this course are to expose students to the following topics:

CLO1: This course provides information about the origin of agriculture & its economic importance.
CLO2: It also deals with the principles and methods of plant tissue culture.
CLO3: Explain the theory and practice of recombinant DNA technology.
CLO4: Analyze morphological description, brief idea of cultivation and economic uses of medicinal plants.
CLO5: Study origin, distribution, botanical description, brief idea of cultivation and economic uses of pulses.

B.Sc. (Medical) 5th Sem

Subject: Economic Botany and Biotechnology-II **Subject Code:** 20UBOT501B

Course Learning Outcomes (CLOs)

The specific objectives of this course are to expose students to the following topics:

CLO1: Investigate utilization and domestification of crop plant throughout history;
CLO2: Study botanical description, processing and uses of beverages, sugar, tea and coffee.
CLO3: Grow, maintain and propagate specific plant and animal cell types in a sterile environment.
CLO4: Select and apply experimental procedures to the spectrum of fields making use of biotechnology.

B.Sc. (Medical) 6th Sem

Subject: Environmental Biology-I **Subject Code**: 20UBOT602A

Course Learning Outcomes (CLOs)

The specific objectives of this course are to expose students to the following topics:

CLO1: This course deals with various ecological components & its management. It also deals with biogeochemical cycles, biodiversity & its conservation.

CLO2: It also deals with biogeochemical cycles, biodiversity & its conservation.

CLO3: Produce a culminating/multi-scale piece of work demonstrating the ability to synthesize concepts and methods to make a contribution to environmental solutions.

CLO4: Apply proficiency in analytical methods, critical thinking, communication, and leadership skills sufficient to make a contribution in environmental and related fields.

B.Sc. (Medical) 6th Sem

Subject: Environmental Biology-II **Subject Code**: 20UBOT602B

Course Learning Outcomes (CLOs)

The specific objectives of this course are to expose students to the following topics:

CLO1: This course would deals with the different types environmental pollutions, global environmental issues and their solution.

CLO2: Appreciate that one can apply systems concepts and methodologies to analyze and understand interactions between social and environmental processes.

CLO3: Acquire values and attitudes towards understanding complex environmental economic- social challenges, and active participation in solving current environmental problems and preventing the future ones.

CLO4: Develop critical thinking for shaping strategies (scientific, social, economic, administrative, and legal) for environmental protection, conservation of biodiversity, environmental equity, and sustainable development.

B.Sc. (Medical) 6th Sem

Subject: Mushroom Culture Technology **Subject Code**: 20SECB604

Course Learning Outcomes (CLOs)

The specific objectives of this course are to expose students to the following topics:

CLO1: This course will help in increasing the understanding of the students about the technologies related to practices of mushroom culture.

CLO2: To provide basic knowledge in cultivation of mushrooms.

CLO3: Sustainable use of resources.

CLO4: To promote self-employment

CLO5: Able to grow mushrooms in a natural way.