

# Swarnamoyee Jogendranath Mahavidyalaya

At+P.O.: Amdabad, P.S.: Nandigram, Dist.: Purba Medinipur, PIN 721650

## DEPARTMENT OF BOTANY

### COURSE OUTCOMES OF GENERAL COURSES UNDER CBCS w.e.f. 2018-19

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| <p><b>Course Code:</b> DSC-1A</p> <p><b>Course Title:</b> Biodiversity (Microbes, Algae, Fungi &amp; Archegoniate)</p> <p><b>Credits:</b> 6</p>   |
| <p><b>Course Outcomes:</b></p> <ul style="list-style-type: none"><li>• Understanding of the diversity of microorganisms, algae, fungi, and plant groups.</li><li>• Knowledge of the structural and functional characteristics of viruses, bacteria, algae, fungi, and plants.</li><li>• Familiarity with the ecological roles and distributions of different microbial and plant species.</li><li>• Knowledge of classification systems and taxonomic relationships within each group.</li><li>• Understanding of the life cycles, reproductive strategies, and adaptations of various microorganisms and plant species.</li><li>• Awareness of the economic importance of microbes and plants in various fields such as agriculture, medicine, industry, and environmental conservation.</li></ul> |

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**Course Code:** DSC-1B

**Course Title:** Plant Ecology and Taxonomy

**Credits:** 6

**Course Outcomes:**

- Understanding of the fundamental principles of plant biology, including ecological factors influencing plant growth and distribution.
- Knowledge of the structure and function of ecosystems, including energy flow, trophic organization, and biogeochemical cycling.
- Familiarity with plant communities, succession processes, and the factors influencing community dynamics.
- Understanding of phytogeography, including biogeographical zones and the concept of endemism.
- Proficiency in plant taxonomy, including identification, classification, and nomenclature principles.
- Awareness of taxonomic evidences derived from various disciplines such as palynology, cytology, phytochemistry, and molecular data.
- Knowledge of taxonomic hierarchy, nomenclature rules, and principles governing botanical classification.



**Course Code:** DSC-1C

**Course Title:** Plant Anatomy and Embryology

**Credits:** 6

**Course Outcomes:**

- Understanding of the structural and functional aspects of meristematic and permanent tissues in plants.
- Knowledge of the anatomical features and organization of dicot and monocot roots, stems, and leaves.
- Familiarity with the process of secondary growth, including the structure and function of the vascular cambium and wood formation.
- Understanding of adaptive and protective systems in plants, including the epidermis, cuticle, and stomata, and their adaptations in xerophytes and hydrophytes.
- Knowledge of the structural organization of flowers, including the anatomy of anthers, pollen, ovules, and embryo sacs.
- Understanding of pollination mechanisms, fertilization processes, and seed development, including double fertilization and seed dispersal mechanisms.
- Familiarity with the structure, types, and functions of endosperm, as well as the morphology of dicot and monocot embryos.
- Knowledge of apomixis and polyembryony, including their definitions, types, and practical applications.

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**Course Code:** DSC-1D

**Course Title:** Plant Physiology and Metabolism

**Credits:** 6

**Course Outcomes:**

- Understanding of the fundamental principles underlying plant physiology and biochemistry.
- Knowledge of the importance of water in plant growth and the factors influencing water movement in plants.
- Familiarity with the essential elements required for plant nutrition and their roles in plant metabolism.
- Understanding of translocation mechanisms in phloem and the factors affecting phloem sap movement.
- Knowledge of photosynthesis, including the structure and function of photosynthetic pigments, light reactions, carbon fixation pathways, and photorespiration.
- Understanding of cellular respiration processes, including glycolysis, the TCA cycle, and oxidative phosphorylation.
- Familiarity with enzyme structure, function, catalysis mechanisms, and enzyme inhibition.
- Knowledge of nitrogen metabolism, including biological nitrogen fixation and nitrogen assimilation pathways.
- Understanding of plant growth regulators and their physiological roles in plant growth and development.
- Knowledge of plant responses to light and temperature, including photoperiodism, phytochrome-mediated responses, and vernalization.

**Course Code:** DSE-1A

**Course Title:** Cell and Molecular Biology

**Credits:** 6

**Course Outcomes:**

- Understanding of the principles and techniques used in cell biology and molecular genetics research.
- Knowledge of different microscopy techniques and their applications in studying cellular structures.
- Understanding of the structure and function of prokaryotic and eukaryotic cells, including cell organelles.
- Familiarity with the processes of DNA replication, transcription, and translation in both prokaryotes and eukaryotes.
- Knowledge of the regulation of gene expression in prokaryotes and eukaryotes, including the mechanisms of operon regulation.
- Understanding of the cell cycle and its molecular controls.
- Knowledge of the structure and function of cell membranes and the cell wall.
- Familiarity with genetic material, including DNA structure, types, and replication mechanisms.
- Understanding of the principles of X-ray diffraction analysis and its applications in molecular biology.

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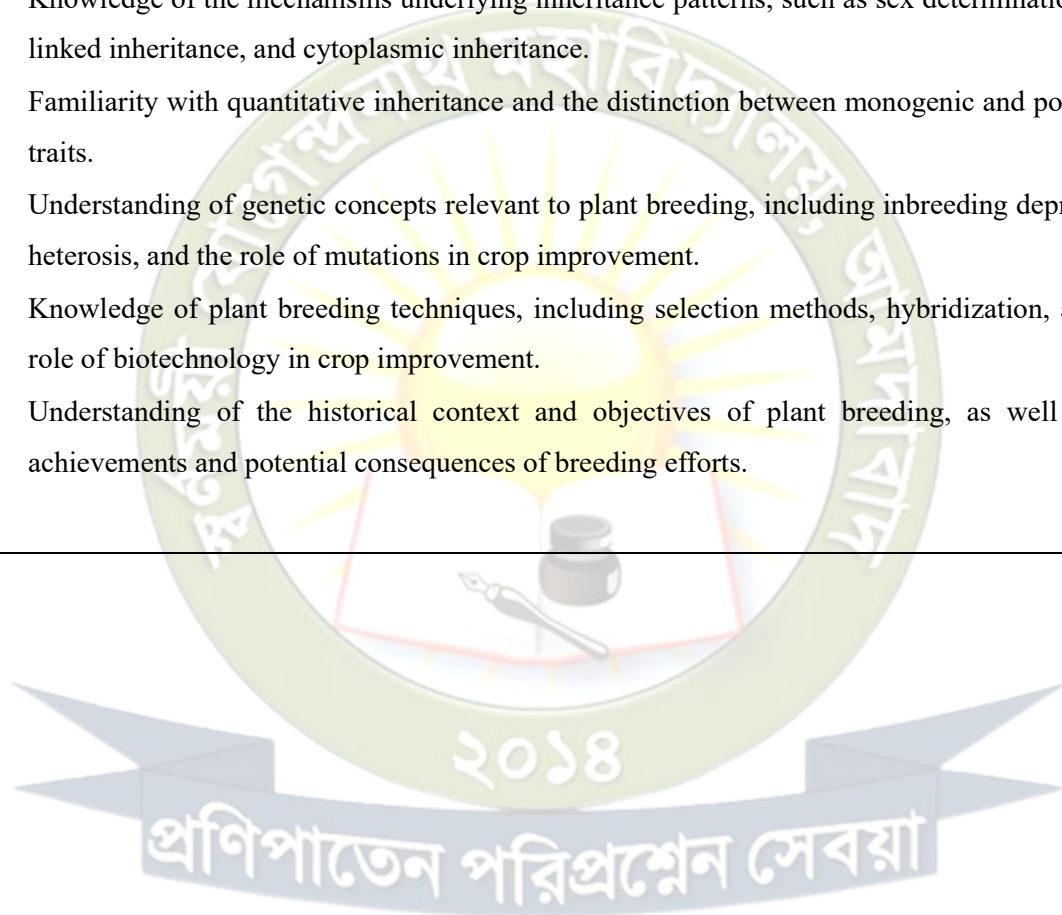
**Course Code:** DSE-1B

**Course Title:** Genetics and Plant Breeding

**Credits:** 6

**Course Outcomes:**

- Understanding of fundamental genetic principles, including Mendelian inheritance, linkage, crossing over, mutations, and chromosomal aberrations.
- Knowledge of the mechanisms underlying inheritance patterns, such as sex determination, sex-linked inheritance, and cytoplasmic inheritance.
- Familiarity with quantitative inheritance and the distinction between monogenic and polygenic traits.
- Understanding of genetic concepts relevant to plant breeding, including inbreeding depression, heterosis, and the role of mutations in crop improvement.
- Knowledge of plant breeding techniques, including selection methods, hybridization, and the role of biotechnology in crop improvement.
- Understanding of the historical context and objectives of plant breeding, as well as the achievements and potential consequences of breeding efforts.





**Course Code:** SEC-3

**Course Title:** Floriculture

**Credits:** 2

**Course Outcomes:**

- Understanding of the history and importance of gardening, floriculture, and landscape design.
- Knowledge of nursery management techniques, including methods of propagation, soil sterilization, and routine garden operations.
- Familiarity with a wide range of ornamental plants, including flowering annuals, herbaceous perennials, vines, trees, bulbous plants, foliage plants, succulents, palms, cycads, ferns, and selaginellas.
- Understanding of garden design principles, including different garden styles and features such as walls, fences, steps, hedges, lawns, flower beds, and water gardens.
- Knowledge of landscaping techniques for public spaces such as highways and educational institutions.
- Understanding of commercial floriculture practices, including factors affecting flower production, cut flower packaging, flower arrangements, and cultivation techniques for various cut flowers.
- Familiarity with common diseases and pests affecting ornamental plants and methods for their control and management.

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**Course Code:** SEC-4

**Course Title:** Medicinal Botany

**Credits:** 2

**Course Outcomes:**

- Understanding of the history, scope, and importance of medicinal plants in traditional medicine systems such as Ayurveda, Siddha, and Unani.
- Knowledge of indigenous medicinal sciences, including concepts such as panchamahabhutas, saptadhatu, tridosha, and Rasayana.
- Familiarity with the principles and practices of conservation biology as applied to endangered and endemic medicinal plants.
- Understanding of in situ and ex situ conservation methods, including the role of biosphere reserves, sacred groves, and botanic gardens.
- Knowledge of propagation techniques for medicinal plants, including nursery management, sowing, pricking, greenhouse production, and various methods of vegetative propagation.
- Understanding of ethnobotany and folk medicine, including the study methods, applications, and examples of traditional remedies used in different cultures.
- Knowledge of the application of natural products derived from medicinal plants in the treatment of various diseases and health conditions.

