

## TWO YEAR B.Sc. BOTANY GENERAL PROGRAMME (CBCS)

### PROGRAMME OUTCOME:

The two year B.Sc. General programme in Botany follows the Choice Based Credit System adopted by the University of Burdwan in 2017. The two year programme is divided into four semesters.

It will enable the students to imagine the world through the lens of a botanist. The students at the end of the programme will be able to define and apply basic concepts of botany along with a clear understanding of theories and experiments through which the concepts are derived. With basic knowledge of botany, the students are also able to articulate how research is carried out in botany, with the various approaches to it. The main outcome of the programme is the ability to understand different branches of Botany such as systematics, evolution, ecology, physiology, biochemistry, ethnobotany, medicinal plants, plant interactions with microbes, morphology, anatomy, reproduction, genetics and molecular biology of various life-forms. They become competent enough in various analytical and technical skills related to plant sciences. They also able to identify various life forms of plants, design and execute experiments related to basic studies on botany. Students are also capable to perform short research projects using various tools and techniques in plant sciences and develop scientific temperament and research attitude.

All generic electives are of six credits (06) including four credits (04) for theory and two credits (02) for practicals. The total number of classes allotted is sixty (60).

### SEMESTER-WISE COURSE OUTCOMES:

#### SEMESTER ONE:

#### GE 1: BIODIVERSITY (MICROBES, ALGAE, FUNGI AND ARCHEGONIATE)

**Theory:** This course provides an introduction to various life forms of lower plants and archegoniates. The students will learn about the diversity of lower plant and their distinct features, algal diversity and its industrial application, distinct classes of lichen and their utilization, fungal diversity and their application in various industries, character, classification and utilization of bryophyte at industrial level, different characters in pteridophytes and their uses, distinct features of gymnosperm and their economic potential etc.

**Practical:** Students will learn the microscopic observation and identification of various life forms of algae, fungi, bryophytes, lichens, pteridophytes and gymnosperm. They also learn about the staining techniques of bacteria.

#### SEMESTER TWO:

#### GE 2: PLANT ECOLOGY AND TAXONOMY

**Theory:** This course emphasizes on the application of morphology in plant identification, classification and nomenclature. Students will learn plant diversity, plant collection, preservation techniques and can identify plant in field. Students get aware about various recent computerized tools used in plant taxonomy research. Students will also learn the approaches to the study of

plant ecology, understand the population and community ecology, various ecological factors affecting plants, adaptation in various plants according to habitat. Students will acquire the knowledge of vegetation pattern changes in different ecosystems.

**Practical:** Students will learn identification of common plants with special reference to the botanical name, family, morphology of useful part and the uses. They will aware with various herbarium techniques for the preservation of plants. Students will also learn the special microscopic characters used by plants for their adaptation in different habitats.

### **SEMESTER THREE: GE 3: PLANT ANATOMY AND EMBRYOLOGY**

**Theory:** This course is intended for general students to study the role of anatomy in other allied branches of botany. Students know about the different tissues present in plant, their structure and role. They also understand the differences in internal organization of two distinct plant group and plant parts. This course explains the process of normal and abnormal secondary growth in plants and the difference between them. The students will be able to identify the process of pollination and fertilization. They will be able to discuss the structure and development process of male and female gametophyte, the types of microspore, ovules, embryo, seed and endosperm.

**Practical:** Students will learn internal tissue organization in different parts of different plants including both dicots and monocots. They will also learn and able to distinguish the types of ovules and female gametophyte through microscopic observation.

### **ADD-ON COURSE: ETHNOBOTANY AND MEDICINAL PLANTS**

This special course presents the history of indigenous/traditional plant use in relation to cultural development as well as how modern scientific approaches to ethnobotanical investigation are revealing new and exciting applications for plant materials. It also provides information on various categories of plant use, the importance of traditional knowledge to Western culture, and the role of plant conservation and cultural sustainability. The course will enable the students to know about the traditional knowledge of plants and their uses especially their roles in curing various human diseases, to acquire knowledge on various types of drug preparation, to understand various phytochemicals involved in therapeutics, to study certain important plants involved in home remedies and to understand the importance of preservation and conservation of indigenous medicinal plants. This course will also provide the experience of field study/excursion for identification and herbarium preparation of local medicinal plants to the students.

### **SEMESTER FOUR: GE 4: PLANT PHYSIOLOGY AND METABOLISM**

**Theory:** This course teaches students about the various physiological aspects involved in the plant development, role of enzymes in it and mechanism of photosynthesis, respiration, nitrogen and lipid metabolism. The students will acquire basic knowledge needed for proper understanding of plant functioning, basic skills and techniques related to plant physiology and importance of the bio molecules associated with plant life. This course enables the students to

discuss plant water relations, transport of water and nutrients through plant cells and function of different plant growth regulators in the growth and reproduction of plants.

**Practical:** This course enables the students to acquire basic experimental knowledge of plant water relations, transpiration, photosynthesis and respiration. The students will be able to learn basic skills and techniques related to plant physiology.

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