

**DEPARTMENT OF BOTANY  
SARAT CENTENARY COLLEGE**

**AFFILIATED TO  
THE UNIVERSITY OF BURDWAN**

**PROGRAMME OUTCOME & COURSE OUTCOME**

**3-YEAR DEGREE/4 YEAR HONOURS IN BOTANY  
UNDER CURRICULUM AND CREDIT FRAMEWORK  
FOR UNDERGRADUATE PROGRAMME (CCFUP)**

## **Course Introduction :**

*The new curriculum of NEP-CCFUP for B.Sc. Botany offers holistic knowledge and technical skills to study plants. Exposure will be given to all areas of plant science using a unique combination of core, elective and vocational papers with significant inter-disciplinary components. Students would be exposed to both conceptual ideas and cutting-edge technologies that are presently used in the study of diverse plant life forms, processes, their evolution and interactions with other organisms within the ecosystem. Students would also become aware of the social, economic, and environmental significance of plants and their relevance to the national economy. B.Sc. Botany Programme covers academic activities within the classroom sessions along with practical concepts. Candidates will develop strong ideas on plants kingdom, ecosystem, life processes, their application in making technology, exploring exotic places which might help them to work as researchers or professions like Botanist, Conservationist, Ecologist, Geneticist, Biochemists, Biotechnologist etc.*

## **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.*

- ❖ 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, and 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.*

## **Programme Specific Objectives (PSOs) : B.Sc. 1st Year Course in Botany**

- ❖ This course will provide knowledge on various fields of basic Botany as well as ask now how of basic cell biology and biomolecules.*
- ❖ Students will be given exposure to evolutionary trend in plant kingdom*
- ❖ Syllabus is prepared to enable students for competitive exams in frontier areas of plant sciences.*

## **Course Outcomes (CO)**

### **Major : BOTN1011 - Plant Diversity and Evolution**

- ❖ *Develop understanding about the classification and diversity of different microbes including Bacteria, Viruses, Fungi etc. and other diverse plant groups like, Algae, Fungi & Lichens, Bryophytes, Pteridophytes, Gymnosperms and Angiosperms.*
- ❖ *Gain knowledge about developing commercial enterprise of microbial products. Understand the structure and reproduction of certain selected bacteria, algae, fungi and lichens*
- ❖ *Develop critical understanding on morphology, anatomy and reproduction of Microbes, Algae, fungi, Bryophytes, Pteridophytes, Gymnosperms and Angiosperms.*
- ❖ *Understand the instruments, techniques, lab etiquettes and practices for working in a microbiology laboratory.*
- ❖ *Develops skills for identifying microbes and using them for Industrial, Agriculture and Environmental purposes.*

### **SEC: BOTN1051 - Biofertilizer**

- ❖ *The course will provide basic knowledge about the production, application and importance of biofertilizer*
- ❖ *Students are able to utilize their knowledge to establish a small scale industry*

## **SEMESTER-II**

### **Course Outcome (CO)**

#### **Major : BOTN2011 - Biomolecules & Cell Biology**

- ❖ *Develop understanding on the basic chemistry of biomolecules, their involvement in cellular life processes.*
- ❖ *Develop knowledge on plant cell architecture, their functioning in transducing life processes.*
- ❖ *Develop practical knowledge on biomolecule identification and basic cellular processes.*

#### **Major : (BOTN3011) Microbiology**

#### **Course Objective:**

- ❖ *To gain knowledge of diversity, life forms, life cycles, morphology and importance of microorganisms (Virus & Bacteria) and basic concept of Immunology.*

#### **Course Outcomes:**

- ❖ *Students will learn the structure, function of microbial cell and acquire knowledge about the microbial growth, nutrition, classification and their economic importance.*
- ❖ *They will also know the structural organization of virus, viroid, prion.*
- ❖ *Students will know the basic concept of Immunology.*

**Major : (BOTN3012) Archegoniate**

**Course Objective:**

- ❖ *This course aims at making a familiarity with special groups of plants joined together by a common feature of sexual reproduction involving Archegonia.*

**Course Outcomes:**

- ❖ *The students will be made aware of the group of plants that have given rise to land habit and the lower plants.*
- ❖ *Through field study they will be able to see the plants grow in nature and become familiar with the biodiversity.*

**SEC: BOTN2051 - Organic Cultivation And Protected Agriculture**

- ❖ *The course will gain the knowledge about the concept of organic farming*
- ❖ *The students will also learn about the marketing policies of organic products and its protection*
- ❖ *They will utilize their knowledge to establish organic farm*

**SEMESTER-III**

**Major : (BOTN3011) Microbiology**

**Course Objective:**

- ❖ *To gain knowledge of diversity, life forms, life cycles, morphology and importance of microorganisms (Virus & Bacteria) and basic concept of Immunology.*

**Course Outcomes :**

- ❖ *Students will learn the structure, function of microbial cell and acquire knowledge about the microbial growth, nutrition, classification and their economic importance. They will also know the structural organization of virus, viroid, prion. Students will know the basic concept of Immunology.*

**Major : (BOTN3012) Archegoniate**

**Course Objective:**

- ❖ *This course aims at making a familiarity with special groups of plants joined together by a common feature of sexual reproduction involving Archegonia.*
- ❖ *Creating an understanding by observation and table study of representative members of phylogenetically important groups should be able to make students learn the process of evolution in a broad sense.*
- ❖ *Study of morphology, anatomy, reproduction and developmental changes therein through typological study should create a knowledge base in understanding plant diversity, economic values, taxonomy of lower group of plants.*

**Course Outcomes:**

- ❖ *The students will be made aware of the group of plants that have given rise to land habit and the flowering plants. Through field study they will be able to see the plants grow in nature and become familiar with the biodiversity. to my knowledge students should create their small digital reports where they can capture the zoomed in and zoomed out pictures as well as videos in case, they are able to find some rare structure or phenomenon related to these plant*

### **Skill Enhancement Course : (BOTN3051) Medicinal Botany**

#### **Course Objective**

- ❖ *To impart knowledge on plant chemical resources that may be explored in complementary herbal and alternative medicine. Also to provide an opportunity to explore uses of plants as medicine based on traditional indigenous knowledge and their application in modern pharmaceutical industries.*

#### **Course Outcomes:**

- ❖ *The course will help in skill development related to the contribution of medicinal plants to traditional and modern medicine.*
- ❖ *The importance of holistic mode of treatment of the Indian traditional systems of medicine will be easier.*
- ❖ *It will also help in developing entrepreneurship skills to establish value addition products, botanical.*

### **SEMESTER-IV**

#### **Major: BOTN4011 Phycology**

##### **Course Objective:**

- ❖ *To gain knowledge of diversity, life forms, lifecycles, morphology and importance of algae*

##### **Course Outcomes:**

- ❖ *Students would have understood the classification, characteristic features, cell structure and growth and reproduction in various groups of marine and fresh water algae and their ecological and economic importance*

#### **Major:(BOTN4012)Mycology**

##### **Course Objective:**

- ❖ *To introduce students with various fungal groups, their ecology, classification, characteristics, reproduction and economic Importance*
- ❖ *To introduce students with the phytopathology, its concepts and principles*
- ❖ *To acquaint with various plant diseases, causal organisms and their control*

##### **Course Outcomes:**

*Upon completion of this course, the students will be able to:*

- ❖ *Understand the world of fungi, lichens and pathogens of plants*
- ❖ *Understand the characteristics of the fungi and lichens*
- ❖ *Understand the ecological and economic significance of lichen*
- ❖ *Understand the significance and applications of mycology in various fields of live hood.*
- ❖ *Identification of common plant diseases and their control measures*

## **Major:(BOTN4013)Plant Pathology**

### **Course Objective:**

- ❖ *To introduce students with the phytopathology, its concepts and principles and also to acquaint with various plant diseases, causal organisms and their control measures.*

### **Course Outcomes:**

- ❖ *Upon completion of this course, the students will be able to understand the basic principles for identification of common plant diseases and their control measures.*
- ❖ *Also to understand the economic and pathological importance of pathogenic microorganisms.*

## **Minor: BOTN4021 Plant Physiology & Metabolism**

### **Course Objective:**

- ❖ *The course aims impart knowledge on how plants function and interact with environment, namely the importance of water, minerals, hormones, and light in plant growth and development; understand transport mechanisms and translocation in the phloem, and appreciate the commercial applications of plant physiology.*

### **Course Outcomes**

- ❖ *The students will be able to correlate structure-function relationship that govern plant life processes.*
- ❖ *The chemical basis of life processes that regulate system biology of plants will also be understandable.*
- ❖ *The link between theory and practical syllabus is established, and the employability of youth would be enhanced.*
- ❖ *The youth can also begin small-scale enterprises.*