



BEJOY NARAYAN MAHAVIDYALAYA

(GOVT. SPONSORED)

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Ref. No.

Date. 01.08.2022

B.Sc Honours in Botany (CBCS) under The University of Burdwan

Programme Outcomes (PO)

From the Academic Session 217-18, new CBCS syllabus was introduced by the University of Burdwan, which is our affiliating University at present. The Bachelor of Science (B.Sc.) programme in Botany is an undergraduate degree that focuses on the study of plants, their structure, function, categorization, and interactions with the environment. This comprehensive programme gives students a solid foundation in plant biology and prepares them for a variety of careers in industries such as research, education, conservation, agriculture, and pharmaceuticals.

PO-1: Plant Biology Knowledge and grasp: One of the key aims of the B.Sc. Botany programme is to provide students with a strong grasp and knowledge of plant biology. Plant morphology, anatomy, physiology, biochemistry genetics, molecular biology and reproduction are taught to students, as well as their evolutionary history and diversity. They obtain a thorough awareness of how plants work and adapt to their surroundings, as well as their connections with other creatures.

PO-2: Practical Plant Science Skills: The programme emphasises the development of practical plant science skills. Microscopy, DNA analysis, plant tissue culture, and plant breeding are among the laboratory skills taught to students. In addition, they learn practical skills such as plant identification, data gathering, and ecological survey procedures. These practical skills enable students to perform independent research and contribute to botanical developments.

PO-3: Critical Thinking and Problem-Solving Skills: The B.Sc. Botany programme promotes critical thinking and problem-solving skills. Students gain an understanding of complicated biological processes and ecological relationships. They learn how to analyse data, organise experiments, and conduct statistical analyses. These abilities enable them to analyse scientific material, create research questions, and offer novel solutions to plant biology and environmental conservation concerns.

PO-4: Understanding of Plant-Environment Interactions: A key goal of the B.Sc. Botany programme is to help students have a better understanding of plant-environment

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interactions. They investigate the effects of abiotic variables on plant growth and development, such as light, temperature, water, and nutrients. They also investigate the impact of biotic variables on plant health, such as infections, pests, and symbiotic interactions. This information is critical for dealing with concerns like climate change, biodiversity loss, and sustainable agriculture.

PO-5: Plant Diversity and Conservation: The programme aims to foster an appreciation for plant diversity as well as the importance of conservation. Students study plant categorization and distribution, especially endangered and endemic species. They investigate the function of botanical gardens, national parks, and conservation organisations in the protection of plant biodiversity. Students gain a sense of care for plants and their ecosystems via hands-on experiences and field visits.

PO-6: Effective Communication and teamwork: The B.Sc. Botany programme emphasises the development of effective communication and teamwork abilities. Students learn to deliver scientific information in written reports and oral presentations in a clear and simple manner. They also do group projects and teamwork to simulate real-world scientific interactions. These abilities are required for effectively conveying research findings, working with colleagues, and engaging with the larger scientific community.

PO-7: Ethical and Professional Responsibility: The programme instills in pupils a feeling of ethical and professional responsibility. They learn about the ethical considerations and guidelines for performing plant-based scientific research. Students are encouraged to work with integrity, truthfulness, and transparency. They also become more aware of the social, economic, and environmental repercussions of their study, encouraging responsible and sustainable botanical practises.

Finally, the B.Sc. in Botany programme provides students with a solid basis in plant biology, practical skills in plant science, critical thinking capabilities, and an awareness of plant-environment interactions. It promotes an appreciation for plant diversity, conservation, and ethical scientific research behaviour. This graduate's programmes are well-prepared for a variety of careers in research, education, and conservation.

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Course Outcomes (CO)

Semester	Core Course	Teachers Thought	Course Outcome
I	CC-I: Microbiology and Phycology	Dr. Malay Ghosh Dr. Goutam Ghosh	<p>The study of Microbiology and Phycology offers students a deep understanding of microorganisms including algae, their structures, functions, interactions, and applications. The course outcomes of Microbiology and Phycology are :</p> <p>CO 1: Knowledge of Microorganisms. CO 2: Laboratory Skills. CO 3: Understanding of Microbial Physiology and Genetics. CO 4: Environmental Microbiology. CO 5: Algal Biology and Applications</p> <p>The study of Microbiology and Phycology equips students with a solid foundation in the knowledge and skills necessary to understand microorganisms, algae, their applications, and their impacts on the environment and human health.</p>
I	CC-II: Archegoniatae	Prof Hemanta Ghosh Dr. Arindam Mandal Dr. Parasuram Kamilya	<p>In the field of Botany, the study of archegoniates, also known as embryophytes, focuses on the diverse group of plants that includes mosses, liverworts, hornworts, and vascular plants (ferns, gymnosperms, and angiosperms). Here are the course outcomes of the B.Sc. Botany program with a focus on archegoniates:</p> <p>CO 1: Knowledge of Plant Diversity. CO 2: Reproduction and Life Cycles. CO 3: Evolution and Phylogeny. CO 4: Ecological Significance. CO 5: Conservation and Restoration.</p> <p>Graduates of this program are well-prepared for careers in plant ecology, conservation biology, research, and education.</p>
II	CC-III: Mycology and Phytopathology.	Dr. Malay Ghosh Prof Hemanta Ghosh	<p>The study of Mycology and Phytopathology within the B.Sc. Botany program focuses on the field of plant pathology, which involves the study of fungal diseases and their impact on plants. Here are the course outcomes of Mycology and Phytopathology in the B.Sc. Botany program:</p> <p>CO 1: Knowledge of Fungal Diversity. CO 2: Understanding of Plant-Fungal Interactions. CO 3: Disease Diagnosis and Identification. CO 4: Disease Management Strategies. CO 5: Ecological and Environmental Impacts. CO 6: Ethical and Sustainable Practices.</p>

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			These course outcomes aim to equip students with a solid foundation in mycology and phytopathology, preparing them for careers in research, agriculture, plant pathology, environmental science, or further studies in related fields.
II	CC-IV: Morphology & Anatomy of Angiosperms	Prof Hemanta Ghosh Dr.Arindam Mandal Dr.Parasuram Kamilya	<p>The course "Morphology & Anatomy of Angiosperms" in a B.Sc. program focuses on the study of the form, structure, and anatomical features of flowering plants. Here are some common course outcomes or learning objectives that you can expect from this course:</p> <p>CO 1: Understand the diversity of angiosperms. CO 2: Study plant organs and their functions. CO 3: Explore floral morphology. CO 4: Understand plant anatomy. CO 5: Appreciate the ecological significance.</p> <p>Overall, the course aims to provide a comprehensive understanding of the morphology and anatomy of angiosperms, enabling you to identify and appreciate the diverse forms and structures of flowering plants and their ecological significance.</p>
III	CC-V: Plant Ecology and Phytogeography	Dr.Goutam Ghosh	<p>The course "Plant Ecology and Phytogeography" in a B.Sc. (Bachelor of Science) program typically focuses on the study of plant communities, their distribution patterns, and the ecological processes that influence their development and dynamics. The outcomes of Plant Ecology and Phytogeography course are given below:</p> <p>CO 1: Knowledge of Plant Ecology. CO 2: Understanding Plant Community Dynamics. CO 3: Plant Distribution Patterns. CO 4: Fieldwork and Data Analysis. CO 5: Conservation and Management.</p> <p>In the course aims to provideequips students with the knowledge and skills necessary for careers in environmental science, ecology, conservation, land management, or further studies in related fields</p>
III	CC-VI: Plant Systematics	Dr.Parasuram Kamilya	<p>The course outcome for Plant Systematics in a B.Sc. (Bachelor of Science) program typically focuses on developing a comprehensive understanding of the taxonomy, classification, identification, and evolutionary relationships of plants. Here are some common course outcomes for Plant Systematics at the undergraduate level:</p> <p>CO 1: Knowledge of Plant Diversity.</p>

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III	CC-VII: Economic Botany	Prof Hemanta Ghosh Dr.Arindam Mandal	<p>The course outcome for "Economic Botany" in a B.Sc. program typically focuses on providing students with a comprehensive understanding of the economic importance of plants and their various applications. Here are some common course outcomes for Economic Botany:</p> <p>CO 1: Economic Importance of Plants. CO 2: Plant Utilization. CO 3: Plant Products and Trade. CO 4: Medicinal and Aromatic Plants. CO 5: Ethnobotany and Traditional Knowledge. CO 6: Conservation and Sustainable Use.</p>
III	SEC-1: Mushroom Culture Technology	Dr. Malay Ghosh	<p>The course outcome for "Mushroom Culture Technology" in the field of Botany in a B.Sc. program are given below:</p> <p>CO 1: Understanding of Fungal Biology. CO 2: Cultivation Techniques. CO 3: Mushroom Species Identification. CO 4: Nutritional and Medicinal Value. CO 5: Commercial Production and Research Skills. CO 6: Safety and Quality Assurance.</p> <p>Overall, the course aims to provide students with a comprehensive understanding of mushroom culture technology, enabling them to pursue careers in mushroom cultivation, research, entrepreneurship, or related fields in the agricultural and biotechnology sectors.</p>
IV	CC-VIII: Paleobotany& Palynology	Dr.Parasuram Kamilya Lily Bhattacharya	<p>The course outcomes for Paleobotany and Palynology in a B.Sc. Botany program typically aim to provide students with a comprehensive understanding of the principles, methods, and applications of these specialized fields within botany. The course outcomes for Paleobotany and Palynology are given below:</p>

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			<p>CO 1: Knowledge of Paleobotany. CO 2: Understanding of Palynology. CO 3: Identification Skills. CO 4: Fieldwork and Laboratory Techniques. CO 5: Environmental and Conservation Perspectives.</p>
IV	CC-IX: Biomolecule & Cell Biology	Dr.Arindam Mandal Dr.Goutam Ghosh	<p>The course "Biomolecules & Cell Biology Botany" in a B.Sc. program typically focuses on the study of biomolecules, cellular structures, and functions, with a specific emphasis on botany-related topics. The course outcomes for Biomolecules & Cell Biology Botany are given below:</p> <p>CO 1: Knowledge of Biomolecules. CO 2: Cell Biology. CO 3: Plant Anatomy and Morphology. CO 4: Photosynthesis and Respiration. CO 5: Plant Genetics. CO 6: Plant Physiology.</p> <p>Overall, the course aims to equip students with a solid foundation in biomolecular and cellular aspects of botany.</p>
IV	CC-X: Molecular Biology	Dr. Malay Ghosh Prof Hemanta Ghosh	<p>The course outcomes for a B.Sc. program in Molecular Biology and Botany typically include the following:</p> <p>CO 1: Understanding of Basic Concepts of Molecular Techniques. CO 2: Understanding of Plant Physiology. CO 3: Knowledge of Plant Genetics. CO 4: Understanding of Plant-Microbe Interactions. CO 5: Familiarity with Biotechnology Applications. CO 6: Environmental Awareness, Critical Thinking and Problem-Solving.</p> <p>These course outcomes aim to provide students with a comprehensive understanding of molecular biology principles as they relate to the study of plants, preparing them for various career paths in research, academia, biotechnology, conservation, and more.</p>
IV	SEC-2: Biodiversity and Human Welfare	Prof Hemanta Ghosh	<p>This course aims to provide students with a comprehensive understanding of the relationship between biodiversity and human well-being. The outcome of this course are given below:</p> <p>CO 1: Understanding Biodiversity.</p>

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V	CC-XI: Plant Physiology	Dr. Malay Ghosh Prof Hemanta Ghosh	<p>The course on Plant Physiology in the field of Botany aims to provide students with a comprehensive understanding of the physiological processes and mechanisms that occur in plants. By the end of the course, students are expected to achieve the following outcomes:</p> <p>CO 1: Knowledge of Plant Structure and Function. CO 2: Understanding of Plant Metabolism. CO 3: Comprehension of Plant Growth and Development. CO 4: Application of Plant Physiology in Agriculture and Biotechnology. CO 5: Development of Practical Skills.</p> <p>The course on Plant Physiology in B.Sc. Botany aims to provide students with a solid foundation in understanding the physiological processes that occur in plants.</p>
V	CC-XII: Plant Metabolism	Dr. Arindam Mandal Dr. Malay Ghosh	<p>Course Outcome for Plant Metabolism in Botany (B.Sc.) are given below:</p> <p>CO 1: Understanding of Plant Biochemistry. CO 2: Knowledge of Enzymes and Metabolic Regulation. CO 3: Familiarity with Primary and Secondary Metabolism. CO 4: Understanding of Photosynthesis. CO 5: Knowledge of Respiration and Energy Metabolism. CO 6: Application of Metabolic Knowledge</p> <p>Overall, the course outcome for this course aims to provide students with a comprehensive understanding of the biochemical processes and metabolic pathways in plants, and equip them with the necessary knowledge and skills to explore the diverse aspects of plant metabolism and its applications.</p>
V	DSE-1: Reproductive Biology of Angiosperm	Dr. Arindam Mandal Prof Hemanta Ghosh	<p>The course "Reproductive Biology of Angiosperms" typically covers the study of the reproductive processes and mechanisms in flowering plants, known as angiosperms. The main goal of the course is to provide students with a comprehensive understanding of the various aspects of plant reproduction, including both sexual</p>


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			<p>and asexual modes. Some of the Course Outcome are :</p> <p>CO 1: Knowledge of Floral Morphology.</p> <p>CO 2: Pollination Mechanisms.</p> <p>CO 3: Plant Reproductive Strategies, Fertilization and Seed Development.</p> <p>CO 4: Plant Reproduction and Human Agriculture Reproductive Disorders.</p> <p>It may prepare students for further studies or careers in plant biology, plant breeding, agriculture, or related fields.</p>
V	DSE-2: Natural Resource Management	Dr. Goutam Ghosh	<p>The course outcome for Natural Resource Management (Botany) in a B.Sc. program typically focuses on providing students with a comprehensive understanding of the principles and practices related to managing natural resources, particularly in the context of land, water, energy and biological resources. The outcome are given below:</p> <p>CO 1: Conservation and Sustainability and Ecosystem Management.</p> <p>CO 2: Fieldwork and Practical Skills.</p> <p>CO 3: Energy resources and contemporary practices.</p> <p>CO 4: National and International efforts in resource Management</p>
VI	CC-XIII: Genetics & Plant Biotechnology	Dr. Goutam Ghosh Dr. Arindam Mandal	<p>The course outcomes for a Genetics & Plant Biotechnology course in Botany for a B.Sc. program are given below:</p> <p>CO 1: Understanding of Genetics.</p> <p>CO 2: Familiarity with Plant Biotechnology.</p> <p>CO 3: Biotechnological Applications.</p> <p>CO 4: Environmental and Ethical Considerations.</p> <p>It may prepare students for further studies or careers in plant biology, Genetics & Plant Biotechnology, agriculture, or related fields.</p>
VI	CC-XIV: Plant Biotechnology	Dr. Malay Ghosh Prof Hemanta Ghosh	<p>The outcomes for Plant Biotechnology in Botany are designed to provide students with a solid foundation in plant biotechnology and its application in the field of botany. The course outcomes are given below:</p> <p>CO 1: Understanding Plant Biotechnology.</p> <p>CO 2: Application of Biotechnological Tools.</p> <p>CO 3: Plant Genetic Engineering.</p> <p>CO 4: Tissue Culture Techniques.</p> <p>CO 5: Plant Biotechnology Applications.</p> <p>The course on Plant Biotechnology in B.Sc. Botany aims to provide students with a</p>

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VI	DSE-3: Plant Evolution and Biodiversity	Dr.Parasuram Kamilya	<p>solid foundation in understanding the Plant Biotechnological processes.</p> <p>Course Outcome of "Plant Evolution and Biodiversity" are given below:</p> <p>CO 1: Understanding Plant Evolution.</p> <p>CO 2: Plant Diversity and its Taxonomy and Classification.</p> <p>CO 3: Plant Adaptations, Plant Reproduction and Life Cycles.</p> <p>CO 4: Plant Evolutionary History, Conservation and Threats to Plant Biodiversity.</p> <p>CO 5: Research and Data Analysis.</p> <p>By the end of the course, students should have a strong foundation in plant evolution and biodiversity, enabling them to pursue further studies or careers in fields such as botany, ecology, conservation biology, and plant biotechnology. They will have gained a deep appreciation for the diversity and importance of plants in ecosystems and society.</p>
VI	DSE-4: Horticultural Practices and Post-Harvest Technology	Dr.Goutam Ghosh Dr.Arindam Mandal	<p>Horticultural Practices and Post-Harvest Technology is a course that provides students with a comprehensive understanding of the principles and techniques involved in the cultivation and management of horticultural crops, as well as the post-harvest handling and preservation of these crops. The course aims to equip students with the necessary knowledge and skills to effectively grow and handle horticultural crops, ensuring maximum yield and quality. Upon completion of the course, students can expect to achieve the following learning outcomes:</p> <p>CO 1: Understanding of Horticultural Crop Production.</p> <p>CO 2: Knowledge of Pest and Disease Management.</p> <p>CO 3: Proficiency in Post-Harvest Handling Techniques.</p> <p>CO 4: Familiarity with Value Addition and Marketing.</p> <p>CO 5: Awareness of Sustainable Practices.</p> <p>Overall, the course in Horticultural Practices and Post-Harvest Technology equips students with the necessary knowledge and skills to excel in the field of horticulture. Graduates will be prepared to contribute to the sustainable production, handling, and marketing of horticultural crops, meeting the demands of the industry while ensuring environmental stewardship and food security</p>


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