

PROGRAMME SPECIFIC OUTCOMES OF UNDERGRADUATE PROGRAMMES 2021 onwards)

Name of the programme: B.Sc. BOTANY

PSO1	The range of plant diversity in terms of structure,function and environmental relationships. The role of plants in the functioning of the global ecosystem.
PSO2	Think logically and organize tasks into a structured form. Assimilate knowledge and ideas based on wide reading and through the internetTransfer of appropriate knowledge and methods from one topic to another within the subject .Understand the evolving state of knowledge in a rapidly developing field
PSO3	Build life skill in edible mushroom cultivation, Biofertilizer production, Greenhouse maintenance and seed technology
PSO4	Create platform for higher studies in Botany
PSO5	To promotes career and job opportunities in both Govt. And private sectors

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PROGRAMME

**OUTCOMES OF UNDER GRADUATE PROGRAMMES 2021 ONWARDS)**

**Name of the programme: B.Sc. BOTANY**

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PO1	Understanding of Plant Diversity and its importance in the maintenance of ecological balance
PO2	Students learn to carry out practical work, in the field and in the laboratory, interpreting plant morphology and anatomy, Plant identification, Vegetation analysis techniques
PO3	Apply the knowledge of basic science, life sciences and fundamental process of plants.
PO4	Apply modern techniques and instruments for Biochemical estimation, Molecular Biology, Biotechnology, Plant Tissue culture experiments, cellular and physiological studies of plants with an understanding of the applications in human life.
PO5	Apply the knowledge gained from the studies for the upliftment of society via addressing health, environmental issues, food scarcity etc.

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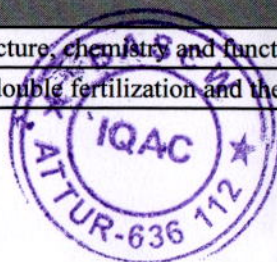
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## COURSE OUTCOMES OF UNDERGRADUATE PROGRAMMES (2021 ONWARDS)

**Name of the Programme: B.Sc., BOTANY**

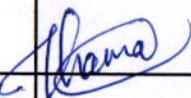
Course Cod	Course Title	Course Outcome
<b>SEMESTER - I</b>		
21UBO01	<b>CORE - I (PLANT DIVERSITY-I) (ALGAE AND BRYOPHYTES)</b>	CO1 Student know about the general characters of algae and bryophytes structure, functions and their economic importance.
		CO2 To Study the systematic position, life cycle and evaluation of Algae
		CO3 Understand the morphological diversity classification of Bryophytes
		CO4 Understand the structure, reproduction, Life cycle and economic importance of the Bryophytes.
		CO5 Learn about the structure, pigmentation, reserves food and methods of reproduction in Algae
<b>SEMESTER - II</b>		
21UBO02	<b>CORE COURSE - II (PLANT DIVERSITY-II) (FUNGI, BACTERIA, VIRUSES AND LICHEN)</b>	CO1 Understand about the basic structure, characters of fungi, lichens, bacteria, and virus.
		CO2 Know about the Economic importance Fungi, Bacteria and lichen
		CO3 know about different types of microorganisms viz. Bacteria, Viruses, Fungi and Cyanobacteria.
		CO4 Understand the Biodiversity of Fungi
		CO5 Gain knowledge about habit, Structure, reproduction of Lichens.
21UBOS01	<b>SBEC - I (MUSHROOM CULTIVATION)</b>	CO1 To help to grow the student self-employment
		CO2 Study the structure, classifications, and types of mushroom
		CO3 Identify the varieties of common edible mushrooms and poisonous mushrooms.
		CO4 student can know about spawn production.
		CO5 know about the harvest and storage of mushrooms
21UBOP01	<b>CORE PRACTICAL I</b>	CO1 study the general parts and usage of microscope
		CO2 student will be able to observe the morphological structure of microscopic studies of L.S and T.S of thallus of different plant diversity under microscope.
		CO3 Learn about the structure, pigmentation, food reserves and methods of fungi
		CO4 Known about the economic importance of algae, fungi and lichens
		CO5 study some plant disease with species reference to the causative agents, symptoms, and etiology and control measures
<b>SEMESTER - III</b>		
CORE - III (CELLULOSE AND LIGNIN)		CO1 Learn the structure, chemistry and functions of cellular organelles Meristems
		CO2 Learn about double fertilization and their significance

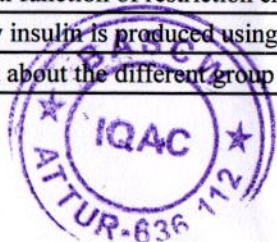
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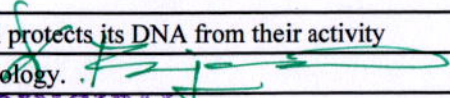


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19UBO05	CORE - V (MORPHOLOGY AND TAXONOMY OF ANGIOSPERM)	CO1	Students will get to know about scope, aim, principles of taxonomy. They will get knowledge about concepts of taxa, genus etc.
		CO2	Student will understand floral structure of Angiospermic plants and how stamens and carpels are evolved. They will also understand adaptive feature of pollinators.
		CO3	Students will get knowledge about various taxonomic evidences. They will also understand how to prepare herbarium sheets and how to read floras.
		CO4	Students will understand about biosystematics. They will also understand adaptive features of ICBN.
		CO5	Student will get idea about how identify the male and female flower, arrangement of the male and female flower.
19UBO06	CORE - VI (CYTOLOGY AND GENETICS)	CO1	Understanding of the history of gene from 'something', 'factor'; and gene and one gene one enzyme one characters hypothesis. Student will also know the interaction of gene, genetic recombination producing the characters differently.
		CO2	Understanding of the structure of chromosome, cell division in mitosis and meiosis
		CO3	Student can differentiate Euchromatin and heterochromatin region of chromosome on the basis of staining properties. Student can draw a good karyotype and Idiograms of Karyotype, and also how the evolution of Karyotype takes place.
		CO4	Understanding the role and process of mutation and different mutagenic agent which brings about mutation in the organism.
		CO5	Students will also understand the role of mutation in crop improvement and permutation.
19UBO07	CORE - VII (BIOINSTRUMENTATIONS AND BIOSTATISTICS)	CO1	student can get idea about how to identify the external and internal view of plant by using simple and compound microscope
		CO2	understanding about the application of TEM and SEM
		CO3	student get knowledge about the application of microtome how to take a serial section by using various microtome
		CO4	Understand the working principle, types and use of various biotechniques like microscopy, chromatography, spectrophotometry and various other microtechniques
		CO5	Understand the fundamental concepts of biostatistics. Learn about the computer and imbibe computer skills for biological data management and graphical presentation. Be enlightened about the need for computer applications, programs and techniques for biology
19BOE01	MAJOR ELECTIVES - I (PLANT BIOTECHNOLOGY)	CO1	understand the basic principles of plant tissue cultures
		CO2	acquire knowledge on sources of biomass
		CO3	Students can have a basic understanding of the plant genetic transformation methods
		CO4	To study the role that Agrobacterium tumefaciens plays in producing genetically modified plant crops will know the methods used to produce transgenic plants, and explain the selection processes for identifying transformed plant cell.
		CO5	Know the natural function of restriction endonucleases and how a normal bacterial cell protects its DNA from their activity
		CO6	Understand how insulin is produced using bacterial cells and importance to gene technology.
		CO1	students learned about the different group of microorganisms

  
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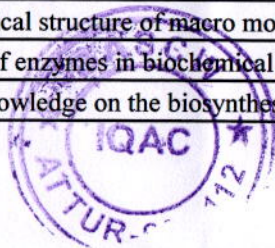
  
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19UBOS04	SBEC - IV (AGRICULTURAL MICROBIOLOGY)	CO2	student acquired depth of knowledge on microbial interaction and their metabolism
		CO3	know about the soil microbial consortium and its role with the environment
		CO4	Student will be up loaded with importance of microbes and their pivotal role in environmental management
		CO5	Student will be familiar about fermentation techniques pertaining to industrial products
19UBOS05	SBEC - V (PLANT BREEDING PLANTS UTILIZATION AS FOOD)	CO1	Students are able to explain about selection methods and hybridization techniques. To gain knowledge about mutation breeding and gain knowledge about mutation breeding and
		CO2	Acquire knowledge on breeding methods in commercially important plants
		CO3	Students can learn about the importance of plant protection method and organic farming system
		CO4	Students will understand the various processes in crop improvement program
		CO5	Knowledge on the basic processes of plant breeding and crop development using different breeding techniques

**SEMESTER - VI**


19UBO08	CORE - VIII (PLANT PHYSIOLOGY)	CO1	Know about the requirement of mineral nutrition for plant growth.
		CO2	Understand the process of Photosynthesis, Respiration and Nitrogen metabolism
		CO3	To gain knowledge about chloroplast structure, photosynthetic pigments, the path of energy from the light reaction through calvin cycle. Students are able to understand the process of translocation of organic solutes in plant.
		CO4	Apply the knowledge on physiological mechanisms of growth regulators in plants.
		CO5	Demonstrate detailed understanding of the physiological mechanisms involved in the uptake and transport of water.
19UBO09	CORE - IX ECOLOGY) (PLANT	CO1	Pertain knowledge on principle factors controlling the environment.
		CO2	Assess the natural vegetational structures of the given geographical locations.
		CO3	Explore knowledge on natural resources available for the benefit of mankind
		CO4	Students learned about the interaction between biotic and abiotic components of the environment
		CO5	Develop understanding on Population and Community ecology along with its characteristics and structure. Gain knowledge on the measures to study population or community.
19UBO10	CORE - X (PLANT PROTECTION)	CO1	Understanding & learning common diseases & control measures of plant diseases.
		CO2	Acquiring skills in plant disease diagnosis, control & management through IPM.
		CO3	The student will understand the fundamental aspects of plant breeding and plant pathology involving the principles achievements, few disease and their casual agents
		CO4	learn about the pathogenic microorganisms and their mode of entry and control measures
		CO5	student can able to understand the detailed study of plant pathology and plant protection techniques.
19UBOE02	MAJOR ELECTIVE COURSE - II (BIOCHEMISTRY) HEAD	CO1	Gain knowledge on chemical bonds, atoms and molecules
		CO2	Understand the chemical structure of macro molecules
		CO3	Applying the nature of enzymes in biochemical pathways
		CO4	Acquire and apply knowledge on the biosynthesis of secondary metabolites.

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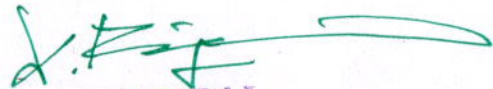


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		CO5	Understand how the enzymes are actively involve various pathway
19UBOS06	SBEC - VI ETHNOBOTANY	MEDICO	
		CO1	Describe the various categories of plant drugs
		CO2	Explore ethnobotanical knowledge of plants through traditional indigenous approaches
		CO3	Interrelate indigenous medicinal plants for the endemic ailments of local habitats
		CO4	Extend the acquired knowledge for cultivation and marketing of medicinal plants.
19UBOS07	SBEC - VII (SEED TECHNOLOGY)	CO1	Understanding the seed structure and related functions, seed health and productivity.
		CO2	Recognize the chemical and physical properties of seeds.
		CO3	Understand the factors responsible for seed germination
		CO4	Apply the various methods of processing of seeds for storage.
		CO5	Implement knowledge to break the seed dormancy and to enhance the plant growth.
19UBOP03	CORE PRACTICAL III	CO1	Dissect out the floral parts of plants coming under the families prescribed in the theory syllabus
		CO2	identify the economic products related to theory syllabus and write botanical name, family and uses.
		CO3	submit minimum of twenty herbarium plants with a proper field note book with correct identification for external valuation
		CO4	Training the student to prepare micro preparation and showing the stages of mitosis (Onion root tips) and showing permanent slide/Photographs of mitosis and meiosis
		CO5	Gain knowledge on fixation, dehydration, embedding, hand sectioning, microtome sectioning.
19UBOP04	CORE PRACTICAL IV	CO1	Determination of Osmotic Pressure plasmolytic method
		CO2	Rate of Photosynthesis - Hydrilla Experiment of Willmont's Bubbler using different colour filters.
		CO3	Extraction and separation of Photosynthetic Pigments by Chromatography techniques (any one method).
		CO4	Students will develop field skill pertaining to vegetation analysis.
		CO5	To enable the student for identify vegetation from different environment.

  
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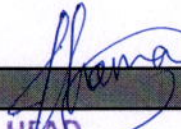
  
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19UBO03	(ANATOMY AND EMBRYOLOGY OF ANGIOSPERM)	CO3	Know about the Structure and development of dicot and monocot embryos.
		CO4	Understanding the basic concepts in plant morphogenesis, embryology and organ development
		CO5	Students will understand pollination mechanism. They will understand the concept of Incompatibility.
19UBOS02	SBEC - II (HORTICULTURE)	CO1	Learn the importance of horticulture – career and occupational opportunities
		CO2	Know about hydroponics and its importance
		CO3	Understand the concepts of bias and sampling variability and straggles for reducing these.
		CO4	Learn the techniques of gardening - Types, Methods & Tools
		CO5	Learn about Olericulture - Cultivation of commercial flower crops

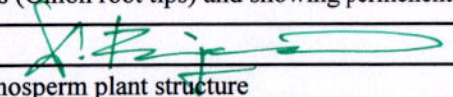
**SEMESTER - IV**

19UBO04	CORE - IV (PTERIDOPHYTES, GYMNOSPERMS AND PALEOBOTANY)	CO1	Learn about the general characters and classification by K.R. Sporne, stelar evolution in Pteridophytes, heterospory and origin of seed habit.
		CO2	Know about the structure, life history and Economic importance of Gymnosperms.
		CO3	Studied the methods of fossilization and fossil plants
		CO4	Understand the concept of Non-existence of UMP test.
		CO5	Understand Sequential testing. Sequential probability ratio test.
19UBOS03	SBEC - III (PLANT TISSUE CULTURE)	CO1	To develop understanding of techniques for tissue culture, cell culture and organ transplantation
		CO2	Explain the various components of plant tissue culture media, e.g. minerals, growth factors, hormones, and what
		CO3	Explain and perform some of the more advanced techniques, e.g. embryo rescue, and protoplasting.
		CO4	Establish and maintain plants in tissue culture and micropropagation, including morphogenesis
		CO5	Learn about the production of Synthetic seeds & significance
		CO6	Student learn about the role of tissue culture in crop improvement.
19UBOP02	CORE PRACTICAL II	CO1	To examine the international structure of pteridophytes and gymnosperms plant
		CO2	Get knowledge of preparation of stain and glycerine
		CO3	Student can able to prepare the permanent slide at their own
		CO4	Training the student to prepare micro preparation and showing the stages of mitosis (Onion root tips) and showing permanent
		CO5	To know about the reproduction parts in Gymnosperm
		CO6	student can easily identify the the differentite between the pteridophytes and gymnosperm plant structure
		CO7	

**SEMESTER - V**

  
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