Department of Botany

B.Sc. Botany

S.No.	Course Code	Course Name	Course Outcomes
SEMESTER- I			
1.	23UBYC11	CORE COURSE – I: PLANT DIVERSITY I - ALGAE	**CO1[K1]:** relate to the structural organization, reproduction and significance of algae **CO2[K2]:** illustrate the knowledge in understanding the various life cycle patterns and the fundamental concepts in algal growth **CO3[K3]:** explain the benefits of various algal technologies on the ecosystem. **CO4[K4]:** compare and contrast the thallus organization and modes of reproduction in Algae **CO5[K5]:** determine the emerging areas of Algal Biotechnology for identifying commercial potentials of algal products and their uses
2.	23UBYC1P	CORE COURSE – II: PRACTICAL: PLANT DIVERSITY I - ALGAE	**CO1[K1]:** examine and identify the algae using key identification characters **CO2[K2]:** recognize the practical skills in preparation of fresh mount and identification of algal forms from algal mixture **CO3[K3]:** describe the internal structure of algae prescribed in the syllabus **CO4[K4]:** survey the algal diversity in fresh/marine water and their economic significance **CO5[K5]:** evaluate the various techniques used for algal culture for commercial purposes

S.No.	Course Code	Course Name	Course Outcomes
3.	23UBYA11	ELECTIVE COURSES GENERIC/DISCIPLINE SPECIFIC - I: GENERAL AND APPLIED ZOOLOGY	**CO1[K1]:** elucidate the diversity, identify and understand the animal diversity **CO2[K2]:** understand the diversity and basic taxonomy of Non chordates **CO3[K3]:** scrutinize the taxonomic position and importance of animal diversity **CO4[K4]:** understand about insects that are beneficial to marcherial
4.	23UBYA1P	ELECTIVE COURSES GENERIC/DISCIPLINE SPECIFIC - I: PRACTICAL: GENERAL & APPLIED ZOOLOGY & CONCEPTUAL ZOOLOGY	**CO1[K1]:** examine the familiar with practical skills in the use of tools, technologies and methods common to microbiology and physiology **CO2[K2]:** apply knowledge and come to know how to handle different organisms **CO3[K3]:** analyze and to observe various specimens by using Microscope **CO4[K4]:** survey the animal diversity in fresh and marine habitats **CO5[K5]:** evaluate the various techniques used for Blood group testing
5.	23UBYS11	SKILL ENHANCEMENT COURSE – I: FOUNDATION COURSE - BASIC BOTANY	**CO1[K1]:** relatethe awareness and appreciation of human friendly algae and their economic importance **CO2[K2]:** illustrate an understanding of microbes and fungi and appreciate their adaptive strategies **CO3[K3]:** articulate on the morphology, anatomy and reproduction of Bryophytes, Pteridophytes and Gymnosperms **CO4[K4]:** compare the structure and function of cells and explain the development of cells **CO5[K5]:** inspect the core concepts and fundamentals of plant biotechnology and genetic engineering

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6.	23UBYN11	SKILL ENHANCEMENT COURSE - II: NON-MAJOR ELECTIVE: ORGANIC FARMING	**CO1[K1]:** recognize the different forms of biofertilizers and their uses **CO2[K2]:** explain and interpret the components, patterns, and processes of bacteria for growth in crop production **CO3[K3]:** apply techniques for synthesizing green manure and develop strategies to increase crop yield **CO4[K4]:** analyze and decipher the significance of biofertilizers in soil fertility **CO5[K5]:** develop a new strategies to enhance growth and quality check of medicinal herbs considering the practical issues pertinent to India
7.	23UBYN12	SKILL ENHANCEMENT COURSE - II: NON-MAJOR ELECTIVE: ENVIRONMENTAL BIOTECHNOLOGY	**CO1[K1]:** recognize the various causes of pollution and control measures. **CO2[K2]:** explain the beneficially role of GMOs on environment. **CO3[K3]:** reflect upon various sustainable environmental protection strategies. **CO4[K4]:** analyze the different methods of air, water, and soil quality monitoring process **CO5[K5]:** evaluate the implications of international legislations and

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8.	23UBYN13	SKILL ENHANCEMENT COURSE - II: NON-MAJOR ELECTIVE: NURSERY AND LANDSCAPE MANAGEMENT	**CO1[K1]:** recognize the basic principles and components of gardening **CO2[K2]:** explain the bio-aesthetic planning and conceptualize flower arrangement **CO3[K3]:** apply the techniques for design various types of gardens according to the culture and art of bonsai **CO4[K4]:** compare and contrast different garden styles and landscaping patterns **CO5[K5]:** prioritize and maintain special types of gardens for outdoor and indoor landscaping
SEMESTER- II			
9.	23UBYC21	CORE COURSE – III: PLANT DIVERSITY II: FUNGI, BACTERIA, VIRUSES, PLANT PATHOLOGY AND LICHENS	**CO1[K1]:** recognize the general characteristics of microbes, fungi and lichens and disease symptoms **CO2[K2]:** review the understanding of microbes, fungi and lichens and appreciate their adaptive strategies based on structural organization **CO3[K3]:** identify the common plant diseases, according to geographical locations and device control measures **CO4[K4]:** analyze the emerging trends in fungal biotechnology with special reference to agricultural and pharmaceutical applications **CO5[K5]:** determine the economic importance of microbes, fungi and lichens

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10.	23UBYC2P	CORE COURSE – IV: PRACTICAL: PLANT DIVERSITY II - FUNGI, BACTERIA, VIRUSES, PLANT PATHOLOGY AND LICHENS	**CO1[K1]:** identify the microbes, fungi and lichens using key identifying characters **CO2[K2]:** discover the practical skills for culturing and cultivation of fungi **CO3[K3]:** identify and select suitable control measures for the common plant diseases **CO4[K4]**: analyze the characteristics of microbes, fungi and plant pathogens **CO5[K5]:** access the useful role of fungi in agriculture and pharmaceutical industry
11.	23UBYA21	ELECTIVE COURSE GENERIC / DISCIPLINE SPECIFIC – II CONCEPTUAL ZOOLOGY	**CO1[K1]:** distinquise mitosis and meiosis **CO2[K2]:** understand placenta, Test tube babis and cancer **CO3[K3]:** study of Mendalian traits, Eugenics and Eutherric **CO4[K4]:** explain blood groups and ECG **CO5[K5]:** describe gene clone and Transgenic animals
12.	23UBYA2P	ELECTIVE COURSES GENERIC/DISCIPLINE SPECIFIC - II: PRACTICAL: CONCEPTUAL ZOOLOGY	**CO1[K1]:** examine the familiar with practical skills in the use of tools, technologies and methods common to Structure of DNA **CO2[K2]:** apply knowledge and come to know how to handle different organisms **CO3[K3]:** analyze and to observe mitosis by using Microscope. **CO4[K4]:** survey the animal diversity in Placenta of rabbit & pig. **CO5[K5]:** evaluate the various techniques used for Blood group testing purposes

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13.	23UBYS21	SKILL ENHANCEMENT COURSE – III: BOTANICAL GARDEN AND LANDSCAPING	**CO1[K1]:** recognize the fundamental concepts of gardening and landscaping **CO2[K2]:** explain the significance of garden adornments and propagation structures **CO3[K3]:** apply the techniques of landscaping for aesthetic purposes and gardening for recreation **CO4[K4]:** distinguish between formal, informal and free style gardens and their applications **CO5[K5]:** develop and design outdoor and indoor gardens and inculcate entrepreneurial skills for landscaping
14.	23UBYN21	SKILL ENHANCEMENT COURSE II: NON MAJOR ELECTIVE COURSE: MUSHROOM CULTIVATION	**CO1[K1]:** recognize the basic principles and components of gardening **CO2[K2]:** explain the various types of food technologies associated with mushroom industry **CO3[K3]:** apply the techniques studied for cultivation of various types of mushroom **CO4[K4]:** analyze and decipher the environmental factors and economic value associated with mushroom cultivation **CO5[K5]:** develop a new method and strategies to contribute to the mushroom production

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15.	23UBYN22	SKILL ENHANCEMENT COURSE II: NON-MAJOR ELECTIVE: HERBAL MEDICINE	**CO1[K1]:** define and describe the principle of cultivation of herbal products **CO2[K2]:** explain the phytochemistry of economically important medicinal herbs **CO3[K3]:** apply the techniques for evaluation of drug adulteration through biological testing **CO4[K4]:** analyse the value added processing / storage / quality control for the better use of herbal medicine
16.	23UBYN23	SKILL ENHANCEMENT COURSE II: NON-MAJOR ELECTIVE: GLOBAL CLIMATE CHANGE	**CO1[K1]:** relate the anthropogenic pressure on the environment and carbon footprint **CO2[K2]:** explain the physical basis of natural green gas house effect on man and materials **CO3[K3]:** elucidate the human influenced driver of our climate system and its applications **CO4[K4]:** analyze the causes and effects of depletion of the stratospheric ozone layer **CO5[K5]:** develop the new strategies for mitigate issues of global environmental change
SEMESTER- III			

S.No.	Course Code	Course Name	Course Outcomes
17.	23UBYC31	CORE COURSE – V: PLANT DIVERSITY III - BRYOPHYTES AND PTERIDOPHYTES	**CO1[K1]:** recognize morphological variations of Bryophytes and Pteridophytes. **CO2[K2]:** explain the anatomy and reproduction of Bryophytes and Pteridophytes **CO3[K3]:** compare and contrast the variations in the internal cellular organization, gametophyte and sporophyte of Bryophytes and Pteridophytes **CO4[K4]:** decipher the stages of plant evolution and their transition to land habitat **CO5[K5]:** access the useful role of Bryophytes and Pteridophytes
18.	23UBYC3P	CORE COURSE – VI: PRACTICAL: PLANT DIVERSITY III - BRYOPHYTES AND PTERIDOPHYTES	**CO1[K1]:** recognize the major groups of Non-vascular and Vascular cryptogams **CO2[K2]:** describe the structure of Bryophytes and Pteridophytes forms prescribed in the syllabus. **CO3[K3]:** identify and illustrate the morphological and anatomical features of bryophytes and Pteridophytes **CO4[K4]:** develop comprehensive skills in sectioning and micro preparation

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19.	23UBYA31	ELECTIVE COURSE GENERIC / DECIPINE SPECIFIC – III: CHEMISTY – I	**CO1[K1]:** describe the principles chemical bonding, nuclear chemistry, thermodynamics and hybridization of organic compounds. **CO2[K2]:** explain the concepts involved in Fuels, drugs and analytical chemistry **CO3[K3]:** Find out the use of isotopes, fertilizers and reaction mechanism **CO4[K4]:** analyze the MO theory, silicones, heterocyclic and Anesthetics **CO5[K5]:** evaluate the application of chromatography, radioisotopes
20.	23UBYA3P	ELECTIVE COURSE GENERIC / DECIPINE SPECIFIC – III: PRACTICAL: CHEMISTY PRACTICAL FOR PHYSICAL AND BIOLOGICAL SCIENCES – I	**CO1[K2]:** estimate oxalic acid by acidimetric and permanganometric method **CO2[K3]:** choose suitable indicator for carrying out volumetric estimation **CO3[K4]:** apply acidimetric and alkalimetric method for the quantitative volumetric estimation of acids and bases **CO4[K5]:** measure quantitatively the amount of inorganic compound accurately with the help of color change of the indicator **CO5[K6]:** plan various volumetric procedures for the estimation of any

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21.	23UBYS32	SKILL ENHANCEMENT COURSE - V: (ENTREPRENEURIAL SKILL) - ENTREPRENEURIAL OPPORTUNITIES IN BOTANY	**CO1[K1]:** relate to how various fields of botany could be understood with an entrepreneurial approach **CO2[K2]:** explain the concept of Entrepreneurial Opportunities in Botany **CO3[K3]:** make of the knowledge gained to start new venture using Plant tissue culture and plant products for commercial exploitations **CO4[K4]:** decipher effective ways of making bio products like organic acids, solvents, beverages, enzymes, antibiotics, mushrooms, biogas and etc **CO5[K5]:** develop new strategies to describe marketing and business management strategy including the role of IPR and bioethics regulations for licensing
22.	23UBYS32	SKILL ENHANCEMENT COURSE – VI: HERBAL TECHNOLOGY	**CO1[K1]:** define and describe the principle of cultivation of herbal products **CO2[K2]:** list the major herbs, their botanical name and chemical constituents **CO3[K3]:** apply techniques for monitoring drug adulteration through the biological testing **CO4[K4]:** analyze and decipher the significance of various methods of harvesting, drying and storage of medicinal herbs **CO5[K5]:** develop the skills for cultivation of plants and their value

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23.	23UESR41	ENVIRONMENTAL STUDIES	**CO1[K1]:** recognize the importance of environment and role of Individuals in its protection. **CO2 [K2]:** explain the key concepts of Ecosystem, biodiversity and climatic change **CO3[K3]:** apply the right measures for the sustainable use of natural resources. **CO4[K4]:** analyse the ethical, cross-cultural, and historical context of environmental issues and the links between Human and Natural Systems.
SEMESTER- IV			
24.	23UBYC41	CORE COURSE - VII: PLANT DIVERSITY IV - GYMNOSPERMS, PALEOBOTANY AND EVOLUTION	**CO1[K1]:** recognize morphological variations of Bryophytes and Pteridophytes **CO2[K2]:**explain the anatomy and reproduction of Bryophytes and Pteridophytes **CO3[K3]:** compare and contrast the variations in the internal cellular organization, gametophyte and sporophyte of Bryophytes and Pteridophytes **CO4[K4]:** decipher the stages of plant evolution and their transition to land habitat **CO5[K5]:** access the useful role of Bryophytes and Pteridophytes

S.No.	Course Code	Course Name	Course Outcomes
25.	23UBYC4P	CORE COURSE -VIII: PRACTICAL: PLANT DIVERSITY IV - GYMNOSPERMS, PALEOBOTANY AND EVOLUTION	**CO1[K1]:** recognize the major groups of Non-vascular and Vascular cryptogams **CO2[K2]:** describe the structure of Bryophytes and Pteridophytes forms prescribed in the syllabus **CO3[K3]:** identify and illustrate the morphological and anatomical features of bryophytes and Pteridophytes **CO4[K4]:** develop comprehensive skills in sectioning and micro preparation **CO5[K5]:** interpret the significance of reproductive structures in Bryophytes and Pteridophytes
26.	23UBYA41	ELECTIVE COURSE GENERIC / DECIPINE SPECIFIC – IV: CHEMISTY FOR BIOLOGICAL SCIENCES – I	**CO1[K1]:** describe the principles coordination chemistry, carbohydrates, catalysis, photochemistry and electrochemistry **CO2[K2]:** explain the concepts in water technology, amino acids and elements in biosystem **CO3[K3]:** apply the Werner's theory, color reaction of amino acids and photochemical laws **CO4[K4]:** analyze structure of carbohydrate, biomolecules, water components and quantum yield **CO5[K5]:** discuss the various cells, order of reactions and amino acids

S.No.	Course Code	Course Name	Course Outcomes
27.	23UBYA4P	ELECTIVE COURSE GENERIC / DECIPINE SPECIFIC – IV: PRACTICAL: CHEMISTY PRACTICAL FOR BIOLOGICAL SCIENCES – II	**CO1[K2]:** recognize the analytical procedure to identify the given organic compounds **CO2[K3]:** determine the saturation/unsaturation nature of given organic compounds **CO3[K4]:** inspect the aliphatic/aromatic and nature of given organic compounds **CO4[K5]:** predict elements (other than C, H and O) present in the given compound **CO5[K6]:** perform systematic analysis and report the functional groups present in the given organic compound. 130
28.	23UBYS41	SKILL ENHANCEMENT COURSE - VII: INDUSTRY MODULE: CULTIVATION OF ALGAE	**CO1[K1]:** obtain an in- depth knowledge on culture and mass cultivation of algae and its different methods **CO2[K2]:** exploration and recommendation of the commercial potential of algal products **CO3[K3]:** understand the applied facet of algology and acquire a complete knowledge about the cultivation methods in algae **CO4[K4]:** describe the preparation of seaweed liquid fertilizers and their applications in agriculture and horticulture

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29.	23UBYS42	SKILL ENHANCEMENT COURSE -VIII: ENVIRONMENTAL IMPACT ANALYSIS	**CO1(K1): e**numerate the fundamental concepts and significance of environmental impact assessment. **CO2(K2):** explain the important steps of EIA process. **CO3(K3):** interpret the environmental appraisal and procedures in India. **CO4(K4):** decipher how to prepare the various documents required by state and federal regulations. **CO5(K5):** develop their own perspectives on impact assessment and be
30.	23UESR41	ENVIRONMENTAL STUDIES	**CO1[K1]:** recognize the importance of environment and role of Individuals in its protection. **CO2 [K2]:** explain the key concepts of Ecosystem, biodiversity and climatic change **CO3[K3]:** apply the right measures for the sustainable use of natural resources. **CO4[K4]:** analyse the ethical, cross-cultural, and historical context of environmental issues and the links between Human and Natural Systems. **CO5[K5]:** evaluate the impact of human action on the biological
SEMESTER- V			

S.No.	Course Code	Course Name	Course Outcomes
31.	23UBYC51	CORE COURSE - IX: Plant Morphology, Taxonomy and Economic Botany	**CO1[K1]:** define the concepts in plant morphology and rules of IUCN in botanical nomenclature **CO2[K2]**: classify systems of plant classification and recognize the importance of herbarium and virtual herbarium. **CO3[K3]:** describe the core concepts of economic botany and relate its applications in human life. **CO4[K4]:** analyze the characters of the families and the economic uses of plants. **CO5[K5]:** interpret concepts related to phylogenetic systematics and APG system of classification.
32.	23UBYC52	CORE COURSE - XI: Plant Anatomy and Embryology	**CO1[K1]**: relate to the fundamental concepts of plant anatomy and embryology **CO2[K2]**: describe the internal tissue organization of various plant organs **CO3[K3]**: elucidate the stages of primary and secondary growth **CO4[K4]**: compare the structural organization of flower in relation to the process of pollination and fertilization

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33.	23UBYC53	CORE COURSE - XII: Cell Biology, Genetics and Plant breeding	**CO1[K1]**: enumerate the structure and functions of cells and organelles **CO2[K2]**: explain about cell cycle, cell division and laws of inheritance with suitable examples **CO3[K3]**: elucidate concepts of sex determination, sex linked inheritance and plant breeding **CO4[K4]**: analyze the importance of genes interaction at population and evolutionary levels **CO5OK5]**: develop conceptual understanding of plant genetic resources, plant breeding, gene bank and gene pool
34.	23UBYC5P	CORE COURSE - XII: Practical V- Plant Morphology, Taxonomy and Economic Botany	**CO1[K1]**: explain plant morphological characters **CO2[K2]**: identify locally available plants and their respective families **CO3[K3]**:develop comprehensive skills in field identification, collection of specimens, writing technical description, botanical drawings and herbaria preparation **CO4[K4]**: construct floral diagram and write floral formula for a given flower **CO5[K5]**: validate the plant specimen by analyzing and dissecting the vegetative and floral characters

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35.	23UBYC5Q	CORE COURSE - XIII: Practical VI - Plant anatomy and Embryology, Cell biology, Genetics and Plant Breeding	**CO1[K1]**: identify the structure of cell organelles and stages of cell division. **CO2[K2]**: classify the types of stomata and ovules. **CO3[K3]**: compare the functions of various ergastic substances present in plant tissues. **CO4[K4]**: perform free hand sectioning of plant materials and decipher the internal tissue organization. **CO5[K5]**: interpret the given genetic data to develop genetic map based
36.	23UBYJ51	SKILL ENHANCEMENT COURSE – V: PROJECT	**CO1[K2]:** demonstrate the acquired basic knowledge of technological tools and techniques in specific domain **CO2[K3]:** apply the domain specific subject knowledge in project **CO3[K3]:** present the solution orally and in the form of project report **CO4[K5]:** choose alternative solution for the existing problem definition **CO5[K6]:** prepare formal report which describes the work undertaken using ICT tools
37.	23UBYO51	MAJOR ELECTIVE COURSE GENERIC/DISCIPLINE SPECIFIC - V: Bio analytical Techniques	**CO1[K1]:** relate to the various biological techniques and its importance **CO2[K2]:** explain the principles of microscopic, chromatographic and electrophoretic techniquees **CO3[K3]:** apply suitable strategies in data collections and disseminating research findings **CO4[K4]:**compare and contrast the significance of different bioanalytical techniques **CO5[K5]:**develop methodologies for extraction and analysis of biochemical compounds

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38.	23UBYO52	MAJOR ELECTIVE COURSE GENERIC/DISCIPLINE SPECIFIC - V: Aquatic Botany	**CO1[K1]:** recognize aquatic plants and their ecological importance **CO2[K2]:** explain about commonly occurring marine and limnetic algae of the Indian coasts **CO3[K3]:** apply techniques for conservation of aquatic plants for value addition **CO4[K4]:** analyze and decipher the significance and properties of mangroves, other aquatic angiosperms and microalgae **CO5[K5]:** develop new strategies to conserve mangroves and device innovative methods for cultivation of aquatic plants
39.	23UBYO53	MAJOR ELECTIVE COURSE GENERIC/DISCIPLINE SPECIFIC - V: Entrepreneurial Botany	**CO1[K1]:** recognize the significance of government agencies for entrepreneurship development **CO2[K2]:** explain about entrepreneurial values, risk assessment and solutions. **CO3[K3]:** make use of entrepreneurial opportUNITies. **CO4[K4]:** analyze and decipher the significance of bioventure and value added products. **CO5[K5]:** devise innovative methods for making value added products.

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40.	23UBYO54	MAJOR ELECTIVE COURSE GENERIC/DISICIPLINE SPECIFIC - VI: Emerging Molecular Techniques	**CO1[K1]:** describe the molecular techniques. **CO2[K2]:** demonstrate the chromatographic techniques **CO3[K3]:** perform the electrophoresis **CO4[K4]:** analyse DNA sequence by using PCR techniques **CO5[K4]:** examine the genome sequence
41.	23UBYO55	ELECTIVE COURSES GENERIC/DISCIPLINE SPECIFIC - VI: PLANT RESOURCES AND UTILIZATION	**CO1[K1]:** list the important medicinal plants **CO2[K2]:** illustrate the characteristic features of the medicinal plants **CO3[K3]:** organize the latex, fibres, timber, beverages, resin and gums yielding plants **CO4[K4]:** inspect the production of biodiesel from plant **CO5[K4]:** separate the oil, fibres, cotton and jute from the economic important plants

S.No.	Course Code	Course Name	Course Outcomes
42.	23UBYO55	MAJOR ELECTIVE COURSE –VI: Prospective of Medicinal Plants	**CO1[K1]:** identify the medicinal plants and describe its external morphology **CO2[K2]:** demonstrate the process and storage of medicinal plants **CO3[K3]:** perform various medical practices in ethno botany **CO4[K4]:** classify the Indian system of medicine and commercialization of products **CO5[K4]:** inspect the conservation process of medicinal plants
43.	23UVED61	VALUE EDUCATION	**CO1[K1]:** identify the basic human values and ethics necessary for harmonious human relationship **CO2 [K2]:** explain the significance of social values and religious tolerance to live in peace **CO3[K3]:** articulate the life-changing principles of brotherhood, honesty, loyalty and community solidarity **CO4[K4]:** analyse emotional, social, spiritual attribute to acquire well balanced personality **CO5[K5]:** assess the importance of harmonious living in the multi-

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44.	23UBTJ52	SUMMER INTERNSHIP AND INDUSTRIAL TRAINING	**CO1[K1]:** identify different career paths within the industry and gain insights into potential future roles **CO2[K3]:** apply theoretical concepts and academic knowledge to real-world situations and challenges encountered during the internship **CO3[K4]:** analyse problems, generate innovative solutions, and make informed decisions **CO4[K5]:** evaluate how to manage time effectively and prioritize tasks to meet
SEMESTER- VI			
45.	23UBYC61	CORE COURSE - XIV: Plant Ecology and Phytogeography	**CO1[K1]**: relate to the significance of the biotic and abiotic components of the ecosystems and energy flow **CO2[K2]**: summarize the phytogeographical division of India **CO3[K3]**: explain the implication of pollution on the environment **CO4[K4]**: analyze the implications of functional and behavioral ecology in natural and man-made areas, biodiversity and conservation **CO5[K5]**: develop mitigations for the effective conservation of biodiversity and disaster management

S.No.	Course Code	Course Name	Course Outcomes
46.	23UBYC62	CORE COURSE - XV: Plant Biotechnology and Molecular Biology	**CO1[K1]**: define the fundamentals concepts of plant biotechnology and genetic engineering and central dogma **CO2[K2]**: explain various steps in transcription, protein synthesis and protein modification **CO3[K3]**: elucidate gene cloning and evaluate different methods of gene transfer **CO4[K4]**: analyze the major concerns and applications of transgenic technology **CO5[K5]**: develop their competency on different types of plant tissue culture
47.	23UBYC63	CORE COURSE - XV: Plant Physiology and Plant Biochemistry	**CO1[K1]**: relate to water relation of plants with respect to various physiological phenomenon. **CO2[K2]**: explain the process and significance of photosynthesis and respiration **CO3[K3]**: elucidate properties of nutrients and their deficiency symptoms in plants. **CO4[K4]**: analyze the biological role of plant growth regulators, carbohydrates, proteins, lipids, nucleic acids and enzymes. **CO5[K5]**: decipher the phenomenon of seed dormancy and germination

S.No.	Course Code	Course Name	Course Outcomes
48.	23UBYC6P	CORE COURSE XVII: PRACTICAL - Plant ecology, Phytogeography, Plant Biotechnology, Molecular biology, Plant Physiology and Biochemistry	**CO1[K2]**: examine to the distribution and adaptations of plants pertaining to their habitat **CO2[K3]**: develop skills in green planning and callus culture **CO3[K4]**: illustrate the basic principles involved in the plant physiology and biochemistry experiments **CO4[K5]**: assess the structure and functions of DNA and RNA **CO5[K6]**: estimate the biochemical components and determine the factors controlling photosynthesis and transpiration of plants
49.	23UBYO61	MAJOR ELECTIVE COURSE GENERIC/ DISCIPLINE - VII: Horticulture	**CO1[K1]**: enumerate the concepts in horticulture and nursery management. **CO2[K2]**: demonstrate a working knowledge on biology of soil, compost making, designing and planning of garden, pest, diseases and nutrient management practices. **CO3[K3]**: appraise the importance of floriculture and evaluate the contribution of spices and condiments on economy. **CO4[K4]**: analyze different methods of weed control in horticultural crops. **CO5[K5]**: develop their competency on pre and post-harvest technology

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50.	23UBYO62	MAJOR ELECTIVE COURSE GENERIC/DISCIPLINE SPECIFIC - VII: Natural Resource Management	**CO1[K1]**: describe the significance of natural resources pertaining to economy and environment **CO2[K2]**: understand the concept of different natural resources and their utilization. **CO3[K3]**: evaluate the management strategies of different natural resources. **CO4[K4]**: analyze the sustainable utilization land, water, forest and energy resources. **CO5[K5]**: design new models of natural resource conservation and maintenance.
51.	23UBYO63	MAJOR ELECTIVE COURSE GENERIC/DISCIPLINE SPECIFIC - VII: Forestry	**CO1[K1]**: describe the basic concepts related to forest distribution, degradation, protection, management and resource utilization. **CO2[K2]**: understand complex interactions of humans and forest ecosystems in a global context. **CO3[K3]**: demonstrate skills for ecological measurements and interpretation of forest ecology management. **CO4[K4]**: examine and decipher the factors influencing forest vegetation, forest degradation and methods of wood preservation **CO5[K5]**: develop new strategies and apply the knowledge gained for problem-solving analysis in the conservation and management of forest ecosystems.

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52.	23UBYO64	MAJOR ELECTIVE COURSE GENERIC/DISCIPLINE SPECIFIC - VIII: Bionanotechnology	**CO1[K1]**: relate to the essential features of biology and nanotechnology that are converging to create the new area of bionanotechnology. **CO2[K2]**: explain the synthesis of nanomaterials and their applications. **CO3[K3]**: apply the knowledge gained to develop nanomaterials. **CO4[K4]**: compare the advantages and disadvantages of nanoparticles in health, medicine and environment. **CO5[K5]**: Construct various types of nanomaterial for application and evaluate the impact on environment.
53.	23UBYO65	MAJOR ELECTIVE COURSE GENERIC/ DISCIPLINE SPECIFIC - VIII: Computer Applications In Botany	**CO1[K1]**: recognize advanced resources for accessing scholarly literature from the internet. **CO2[K2]**: explain the concept of databases and use of different public domain for DNA and proteins sequence retrieval. **CO3[K3]**: apply various software resources with advanced functions to carry out analysis of data procured through research. **CO4[K4]**:decipher the effective utilization of bibliography management software while typing and downloading citations. **CO5[K5]**: determine how the knowledge gained can be used for designing experiments and data interpretation.

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54.	23UBYO66	MAJOR ELECTIVE COURSE - VIII: Forensic Botany	**CO1[K1]**: recognize morphological and anatomical features of plants, which could be useful for forensic investigations. **CO2[K2]**: summarize the forensic importance of different parts of plants. **CO3[K3]**: apply techniques for the collection and preserve of botanical evidences of crime **CO4[K4]**: analyze and decipher the significance of classic and DNA based forensic botany cases **CO5[K5]**:interpret and deduce new methods for the detection of plant poisons used in crime.
55.	23UBYS61	SKILL ENHANCEMENT COURSES –IX: Professional Competency Course: Botany for Competitive Examination and General Studies for Competitive Examination	**CO1[K1]**: identify and efine different groups of plants with their taxonomic position Compare the different groups of plants and evaluate their economic importance **CO2[K2]**: describe the general characters of Bryophytes, Pteridophytes and Gymnosperms **CO3[K3]**: analyse different modifications of plant organs. **CO4[K4]**: evaluate the significance of cell division. Justify the cause for the sex linked inheritance **CO5[K5]**: elaborate the cause and solution of environmental issues

S.No.	Course Code	Course Name	Course Outcomes
56.	23UBYS61	SKILL ENHANCEMENT COURSE - VIII: Botany for Advanced Studies	**CO1[K1]**: describe the basic principles of systematics, including identification, nomenclature, classification, and the inference of evolutionary patterns from data **CO2[K2]**: explain the structures, functions and roles of apical *vs* lateral meristems in monocot and dicot plant growth **CO3[K3]**: construct the organization of nuclear genome **CO4[K4:** analyze the various steps involved in the basic functioning of plant growth and the nutritive value of food **CO5[K5]**: conclude the various processes involved in the energy production in plants and metabolic pathways