KONGUNADU ARTS AND SCIENCE COLLEGE (AUTONOMOUS)

Re-accredited by NAAC with 'A' Grade – 3.64 CGPA out of 4 (3rd Cycle)
College of Excellence (UGC)
Coimbatore – 641 029

DEPARTMENT OF BOTANY (Aided)

COURSE OUTCOMES (CO)

B.Sc. BOTANY

For the students admitted
In the
Academic Year 2018-2019

Programme Code: 05		Title: B.Sc., BOTANY		
Course Code: 18UBO101		Core Paper: 1 - PLANT DIVERSITY - I		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2018-2019	**I**	**7**	**105**	**4**

COURSE OBJECTIVES

- To acquire knowledge on evolution of Thallophytes and to know about the diversity patterns of lower life forms on earth.
- To understand the distribution, structure, reproduction and life cycle patterns of lower life forms like algae, fungi and lichens.
- To know the economic value of lower organisms.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Differentiate and identify the algal species using algal pigments.
K2	CO2	Know about the distribution and mode of nutrition of fungal species.
K3	CO3	Gain thorough knowledge on the symbiotic nature of fungi associated with tree species and improves soil fertility.
K3	CO4	Apply their knowledge on the involvement of lichen as the indicators of pollution.

Programme Code: 05		Title: B.Sc., BOTANY		
Course Code: 18UBO202		Core Paper: 2 - PLANT DIVERSITY - II		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2018-2019	**II**	**7**	**105**	**4**

COURSE OBJECTIVES

- To know about the diversity of Cryptogams and Phanerogams.
- To understand the life cycle pattern of Bryophytes, Pteridophytes and Gymnosperms.
- To study the fossil remains of plants belonging to various eras of Palaeobotany.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Acquire knowledge on diversity among Bryophytes, Pteridophytes and Gymnosperms.
K2	CO2	Understand the internal structure and reproduction of Cryptogams and Phanerogams
K3	CO3	Apply the medicinal and economic knowledge of Bryophytes, Pteridophytes and Gymnosperms for the benefit of human welfare.
K3	CO4	Implement the knowledge on past evidences of fossils for the identification and also to determine the age of the fossil plants through radiocarbon dating.

Programme Code: 05		Title: B.Sc., BOTANY		
Course Code: 18UBO2CL		Core Practical: 1 - PLANT DIVERSITY - I & II		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2018-2019	**II**	**4**	**60**	**2**

COURSE OBJECTIVES

- To enable students to know about diversity of lower organisms.
- To understand the life cycle pattern of Bryophytes, Pteridophytes and Gymnosperms.
- To study the fossil remains of plants in the division of Palaeobotany.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K3	CO1	Explain the primitive and advanced Thallophytes.
K4	CO2	Analyze the internal organization of Cryptogams and Phanerogams.
K5	CO3	Examine the Mycorrhizal association in the roots of higher plants.

Programme Code : 05		Title: B.Sc., BOTANY		
Course code : 18UBO303		Core Paper: 3 - MICROTECHNIQUES, ANATOMY AND EMBRYOLOGY OF ANGIOSPERMS		
Batch	**Semester**	**Hours/Week**	**Total Hours**	**Credits**
2018-2019	**III**	**5**	**75**	**5**

COURSE OBJECTIVES

- To learn the techniques of temporary microscopic slide preparations.
- To inculcate knowledge on the basics of tissues and anatomical features of plants.
- To understand the key aspects of reproductive systems of flowering plants.

COURSE OUTCOME

On successful completion of the course, the students will be able to

K1	CO1	Know about the various developmental aspects of the plants.
K2	CO2	Compare and identify the structural differences existing among the vascular plants.
K3	CO3	Familiarize the basic skills on fixation, dehydration, infiltration and staining process of the specimens.
K3	CO4	Imply the embryological and anatomical knowledge to differentiate the plant taxa.

Programme Code: 05		Title: B.Sc., BOTANY		
Course Code: 18UBO404		Core Paper: 4 - BIOPHYSICS AND BIOSTATISTICS		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2018-2019	**IV**	**5**	**75**	**5**

COURSE OBJECTIVES

- To understand the nature of light.
- To learn the basic principles of biostatistics.
- To impart knowledge to solve the biological problems.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Recognize the dual nature of the light and its reactions with the matter with reference to plants.
K2	CO2	Understand the basic concepts of thermodynamics.
K3	CO3	Impart knowledge on radioactivity and their effects on biological tissues.
K3	CO4	Apply the biostatistical formulae to solve the biological related problems.

Programme Code : 05		Title : B.Sc., Botany		
Course code : 18UBO4CM		Core Practical: 2 - Microtechniques, Plant Anatomy and Embryology of Angiosperms, Biophysics and Biostatistics		
Batch **2018 - 2019**	**Semester** **IV**	**Hours/Week** **4**	**Total Hours** **60**	**Credits** **2**

COURSE OBJECTIVES

- To know the role of fixatives and slide preparation techniques.
- To learn about the special structures associated with the plants.
- To understand role of light in photosynthesis and solve the biological related problems.

COURSE OUTCOME

K3	CO1	Analyze various structures of the internal and external structures of the plants.
K4	CO2	Dissect different stages of embryos of *Tridax* plant.
K5	CO3	Evaluate the normal distribution pattern of a given population.

Programme Code: 05		Title: B.Sc., BOTANY		
Course Code:18UBO4S2		Skill Based Subject: II - HORTICULTURE		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2018-2019	**IV**	**2**	**30**	**3**

COURSE OBJECTIVES

- To learn about the propagation methods of horticultural crops.
- To study the various types of gardening, landscaping and their management.
- To know about commercial floriculture and their significance.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Describe various horticultural practices
K2	CO2	Understand solutions to develop a wide variety of plants through vegetative propagules.
K3	CO3	Develop bonsai plants using various techniques.
K3	CO4	Preserve food and vegetables using suitable techniques for the commercial uses throughout the year.

Programme Code: 05		Title: B.Sc., BOTANY		
Course Code : 18UBO505		Core Paper: 5 - FUNDAMENTALS OF COMPUTER AND BIOINFORMATICS		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2018-2019	**V**	**4**	**60**	**4**

COURSE OBJECTIVES

- To acquire basic knowledge about the computers.
- To know how to create the databases.
- To impart knowledge on biological informations available in the databases.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Inherit computer knowledge and internet usage.
K2	CO2	Understand the components of computer and usage of biological databases.
K3	CO3	Applying the technical skills to know the sequences of nucleic acids and amino acids in genes and protein molecules.
K3	CO4	Identify the structures of various biomolecules using biomolecular visualization techniques.

Programme Code: 05		Title: B.Sc., BOTANY		
Course Code:18UBO506		Core Paper: 6 - TAXONOMY OF ANGIOSPERMS AND ECONOMIC BOTANY		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2018-2019	**I**	**7**	**105**	**5**

COURSE OBJECTIVES

- To recognize the plant families of major flowering plants and their diagnostic features.
- To acquire basic knowledge on the principles of phylogeny and biosystematics.
- To familiarize knowledge on plants with immense economic values.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Acquire better knowledge on plant identification.
K2	CO2	Understand nomenclature principles of flowering plants.
K3	CO3	Gain hands on experience on herbarium preparation techniques.
K3	CO4	Familarize immense knowledge on economic importance of higher plants.

Programme Code: 05		Title: B.Sc., BOTANY		
Course Code: 18UBO507		Core Paper: 7 - CYTOLOGY, GENETICS & PLANT BREEDING		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2018-2019	**V**	**4**	**60**	**5**

COURSE OBJECTIVES

- To learn the cellular details, cell organelles and their functions.
- To acquire knowledge on genes and their interactions.
- To gain knowledge on plant breeding methods and crop improvement proframmes.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Familiarize structural organizations of cells and cellular mechanisms.
K2	CO2	Understand and explain scientific principles behind nature and function of genes and their process of inheritance.
K3	CO3	Apply the acquired knowledge on character exchanges among the individuals due to crossing over.
K3	CO4	Implement the plant breeding techniques for crop improvement.

Programme Code: 05		Title: B.Sc., BOTANY		
Course Code: 18UBO508		Core Paper: 8 - PLANT ECOLOGY, PHYTOGEOGRAPHY AND RESOURCE CONSERVATION		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2018-2019	**V**	**4**	**60**	**5**

COURSE OBJECTIVES

- To understand the principles of ecosystem.
- To acquire basic knowledge about community succession
- To ensure knowledge on resource conservation.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Pertain knowledge on principle factors controlling the environment.
K2	CO2	Understand the distribution of plant species across the country.
K3	CO3	Assess the natural vegetational structures of the given geographical locations.
K3	CO4	Explore knowledge on natural resources available for the benefit of mankind.

Programme Code: 05		Title : B.Sc., BOTANY		
Course code : 18UBO5CN		Core Practical: 3 - FUNDAMENTALS OF COMPUTER AND BIOINFORMATICS		
Batch	**Semester**	**Hours/Week**	**Total Hours**	**Credits**
2018-2019	**V**	**4**	**60**	**2**

COURSE OBJECTIVES

- To insist basic knowledge on the components of the computer.
- To create a document, table, chart and database using MS Office.
- To learn sequence and structure of genes and protein molecules.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K3	CO1	Apply knowledge to create biological databases.
K4	CO2	Analyze secondary structure predictions of any protein molecules using appropriate biological softwares.
K5	CO3	Examine macromolecular structures through visualization tools.

Programme Code: 05		Title: B.Sc., BOTANY		
Course Code: 18UBO609		Core Paper: 9 - BIOCHEMISTRY		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2018-2019	**VI**	**5**	**75**	**4**

COURSE OBJECTIVES

- To study the structure of atom and chemical bonds
- To learn the metabolism of chemical reactions in a cell
- To understand biochemical techniques.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Gain knowledge on chemical bonds, atoms and molecules.
K2	CO2	Understand the chemical structure of macro molecules.
K3	CO3	Applying the nature of enzymes in biochemical pathways
K3	CO4	Acquire and apply knowledge on the biosynthesis of secondary metabolites.

Programme Code: 05		Title : B.Sc., BOTANY		
Course code : 18UBO610		Core Paper: 10 - PLANT PHYSIOLOGY		
Batch	**Semester**	**Hours/Week**	**Total Hours**	**Credits**
2018-2019	**VI**	**5**	**75**	**5**

COURSE OBJECTIVES

- To study the structure of atoms and chemical bonds.
- To know the secondary metabolites in plants.
- To study about water potential and its components.

COURSE OUTCOME

On successful completion of the course, the students will be able to

K1	CO1	Gain the knowledge on the relationship of complementary metabolic process in energy acquisition.
K2	CO2	Understand the water potential and its effects on cellular functions.
K3	CO3	Apply the knowledge on physiological mechanisms of growth regulators in plants.
K3	CO4	Demonstrate detailed understanding of the physiological mechanisms involved in the uptake and transport of water.

Programme Code: 05		Title: B.Sc., BOTANY		
Course Code: 18UBO611		Core Paper: 11 - MICROBIOLOGY AND PLANT PATHOLOGY		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2018-2019	**VI**	**5**	**75**	**4**

COURSE OBJECTIVES

- To know the major groups of microbes.
- To understand the exploitation of microbes in industries.
- To learn the different pathogenic organisms of plants causing various diseases.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Acquire knowledge on the role of prokaryotic organisms.
K2	CO2	Understand the use of microbes in industries for the welfare of mankind.
K3	CO3	Apply the knowledge on microbial technology for the production of antibiotics.
K3	CO4	Implement knowledge on management of plant diseases to increase crop yield.

Programme Code: 05		Title : B.Sc., BOTANY		
Course code : 18UBO6CO		Core Practical: 4 - Taxonomy of Angiosperms, Economic Botany, Cytology, Genetics, Plant Breeding, Plant Ecology, Plant Phytogeography and Resource Conservation		
Batch	**Semester**	**Hours/Week**	**Total Hours**	**Credits**
2018 - 2019	**VI**	**4**	**60**	**2**

COURSE OBJECTIVES

- To learn the morphological, taxonomical and economic values of the plants.
- To study the cellular details, genetic constitution and breeding techniques.
- To impart knowledge on the determination of types of vegetations using quantitative ecological characters.

COURSE OUTCOMES

K3	CO1	Apply knowledge to segregate species variation using dichotomous keys.
K4	CO2	Analyze the progress of cell divisions and their significance for the manipulation of higher yielding crop plants.
K5	CO3	Determine the distribution of vegetations in a given habitat using various quadrat methods.

Programme Code: 05		Title : B.Sc., BOTANY		
Course code : 18UBO6CP		Core Practical: 5 - BIOCHEMISTRY, PLANT PHYSIOLOGY, MICROBIOLOGY AND PLANT PATHOLOGY		
Batch	**Semester**	**Hours/Week**	**Total Hours**	**Credits**
2018-2019	**VI**	**4**	**60**	**2**

COURSE OBJECTIVES

- To acquire skills on handling of the instruments.
- To elucidate the pigments using chromatographic techniques.
- To learn metabolic process of the plants.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K3	CO1	Apply knowledge on instrumentation techniques.
K4	CO2	Analyze the biological samples using biochemical experiments.
K5	CO3	Examine the various physiological activities of the plants.

Programme Code: 05		Title: B.Sc., BOTANY		
Course Code:18UBO6S3		Skill Based Subject: III - CULTIVATION AND MARKETING OF MEDICINAL PLANTS		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2018-2019	**VI**	**2**	**30**	**3**

COURSE OBJECTIVES

- To promote conservation strategies recommended by various agencies.
- To understand the medicinal values of various parts of the medicinal plants.
- To understand the present scenario on marketing of medicinal plants.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Recognize *in situ* and *ex situ* conservation of various medicinal plants.
K2	CO2	Create awareness for utilization of herbal medicines for home remedies.
K3	CO3	Increase public awareness about the efficacies of herbal drugs and their intellectual property rights.
K3	CO4	Implement suitable methods for the cultivation of more and more wild indigenous and endemic medicinal plants.

Programme Code: 05		Title: B.Sc., BOTANY		
Course Code: 18UBO6Z1		PROJECT WORK & VIVA - VOCE		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2018-2019	**VI**	**4**	**60**	**5**

COURSE OBJECTIVES

- To know the practical problems in various fields of Botany.
- To understand to collect the related data in the selected fields.
- To apply suitable skill to solve the selected problems through proper execution.

COURSE OUTCOME

On successful completion of the project work, the students will be able to

K3	CO1	Applying theoretical knowledge in lab oriented experiments.
K4	CO2	Analyzing the importance of project while collecting the necessary data.
K5	CO3	Evaluating variations between the theories and the experiments.
K5	CO4	Executing appropriate methods to get the correct interpretation to present the results.

Programme Code: 05	Title: B.Sc., BOTANY		
	Major Elective: 1 - FORESTRY		
Batch 2018-2019	Hours / Week 4	Total Hours 60	Credits 5

COURSE OBJECTIVES

- To understand the basic concepts of forest and their distribution types.
- To acquire knowledge on forest resources and their utilization.
- To gain knowledge on laws of conservation of forests.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Recognize the importance of forest produce to mankind.
K2	CO2	Understand the economic value of forest and their importance to the society.
K3	CO3	Reclamation of wastelands with suitable tree species.
K3	CO4	Implement the economic benefits of trees in day to day life

Programme Code: 05	Title: B.Sc., BOTANY		
	Major Elective: 2 - BIOTECHNOLOGY		
Batch	**Hours / Week**	**Total Hours**	**Credits**
2018-2019	**4**	**60**	**5**

COURSE OBJECTIVES

- To familiarize the fundamental principles of biotechnology.
- To obtain knowledge on various developments and potential applications of gene cloning technology.
- To know the basic principles employed for the production of biogoods.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Demonstrate the basic concepts of biotechnology
K2	CO2	Understand the role and importance of biotechnological tools for the production of bioproducts.
K3	CO3	Implement the basic skills and techniques related to gene cloning for the development of transgenic plants.
K3	CO4	Adoptation of conservation strategies through micropropagation techniques and to protect RET listed plant species.

Programme Code: 05	Title: B.Sc., BOTANY		
	Major Elective: 3 - FOOD SCIENCE		
Batch **2018-2019**	**Hours / Week** **4**	**Total Hours** **60**	**Credits** **5**

COURSE OBJECTIVES

- To know about the food groups.
- To understand the food processing technology.
- To analyze and communicate food issues.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Acquire manufacturing processes and technologies used in the production of food products.
K2	CO2	Understand the knowledge on the process of food product development and their environmental consideration.
K3	CO3	Explain the functional properties of food in human nutrition.
K3	CO4	Develop skills in researching, analyzing and communicating food issues.

Programme Code: 05	Title: B.Sc., BOTANY		
	Major Elective: 4 - SEED BIOLOGY		
Batch **2018-2019**	**Hours / Week** **4**	**Total Hours** **60**	**Credits** **5**

COURSE OBJECTIVES

- To study the structure of angiospermic seeds
- To analyze various products produced by the seeds.
- To examine the germination capacity of the seeds.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Recognize the chemical and physical properties of seeds.
K2	CO2	Understand the factors responsible for seed germination.
K3	CO3	Apply the various methods of processing of seeds for storage.
K3	CO4	Implement knowledge to break the seed dormancy and to enhance the plant growth.

Programme Code: 05	Title: B.Sc., BOTANY		
	Major Elective: 5 - PHARMACOGNOSY		
Batch **2018-2019**	**Hours / Week** **4**	**Total Hours** **60**	**Credits** **5**

COURSE OBJECTIVES

- To study the drug development from medicinal plants.
- To understand the traditional systems of medicines like Ayurveda, Siddha & Unani.
- To know the pharmacological actions of plant drugs.

COURSE OUTCOME

On successful completion of the course, the students will be able to

K1	CO1	Acquire knowledge on the therapeutic uses of plant drugs.
K2	CO2	Understand the traditional and modern system of medicine.
K3	CO3	Relates physiological action of various plant drugs.
K3	CO4	Recognize route of drug administration and its pharmaceutical dosage forms.

Programme Code: 05	Title: B.Sc., BOTANY		
	Major Elective: 6 - MEDICINAL PLANTS		
Batch **2018-2019**	**Hours / Week** **4**	**Total Hours** **60**	**Credits** **5**

COURSE OBJECTIVES

- To obtain knowledge on the various secondary metabolites in medicinal plants
- To acquire knowledge on the geographical sources of drugs and their classification.
- To analyze the cultivation and trading practices of medicinal plants.

COURSE OUTCOME

On successful completion of the course, the students will be able to

K1	CO1	Describe the various categories of plant drugs.
K2	CO2	Explore ethnobotanical knowledge of plants through traditional indigenous approaches.
K3	CO3	Interrelate indigenous medicinal plants for the endemic ailments of local habitats.
K3	CO4	Extend the acquired knowledge for cultivation and marketing of medicinal plants.

Programme Code: 05		For B.Sc., ZOOLOGY		
Course Code: 18UBO1A1		Allied-1 Botany: 1 (PHYCOLOGY, MYCOLOGY, PLANT PATHOLOGY, BRYOPHYTES, PTERIDOPHYTES & GYMNOSPERMS) (FOR ZOOLOGY STUDENTS)		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2018-2019	**I**	**5**	**105**	**4**

COURSE OBJECTIVES

- To study the classification of Cryptogams & Gymnosperms.
- To learn the structure and life cycle patterns of primitive to advanced life forms.
- To impart knowledge on the economic values of plants.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Gain knowledge on disease causing microorganisms.
K2	CO2	Understand the life cycle patterns of Cryptogams and Gymnosperms.
K3	CO3	Explore the economic importance of lower life forms.
K3	CO4	Apply their knowledge to identify plant diseases and their control measures.

Programme Code: 05		For B.Sc., ZOOLOGY		
Course Code: 18UBO2A2		Allied-2 Botany: 2 (ANATOMY, EMBRYOLOGY, TAXONOMY OF ANGIOSPERMS, PHYSIOLOGY AND ENVIRONMENTAL BOTANY) (FOR ZOOLOGY STUDENTS)		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2018-2019	**II**	**5**	**105**	**4**

COURSE OBJECTIVES

- To differentiate the anatomical and reproductive features of monocot and dicots.
- To acquire knowledge on the classification and nomenclature of Angiosperms.
- To understand physiological process and metabolism in plants.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Recognize structural organization and morphological variations among the Angiospermic taxa.
K2	CO2	Understand the use of keys and manuals for identifying any unknown plants at species level.
K3	CO3	Application of micronutrients and growth regulators for the development of plants.
K3	CO4	Explore knowledge on ecosystems, environmental pollution and soil conservation strategies.

Programme Code: 05		For B.Sc., ZOOLOGY		
Course code : 18UBO2AL		ALLIED PRACTICAL BOTANY- I & II		
Batch 2018 - 2019	Semester II	Hours/Week 2	Total Hours 60	Credits 2

COURSE OBJECTIVES

- To acquire knowledge on the morphological and anatomical features of vascular plants.
- To learn the basic concepts and principles of ecosystem.
- To create basic skills on biosystematics and herbarium preparation techniques.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K3	**CO1**	Apply knowledge on the identification of lower life forms.
K4	**CO2**	Analyze various diseases and their impact on crop plants
K5	**CO3**	Examine physiological process that occur in plant life .

Programme Code: 05		For B.Sc., ZOOLOGY, BIOCHEMISTRY AND BIOTECHNOLOGY		
Course Code: 18UBO5X1		Extra Departmental Course (EDC) - MEDICINAL BOTANY AND HUMAN WELFARE		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2018-2019	**V**	**2**	**30**	**3**

COURSE OBJECTIVES

- To study the Indian system of traditional medicine.
- To gain knowledge on pharmacognosy of medicinal plants.
- To familiarize cultivation technologies of medicinal plants.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Recognize crude drugs used in traditional system of medicine.
K2	CO2	Understand the therapeutic potential of crude drugs.
K3	CO3	Apply the knowledge in the cultivation practices of medicinal plants.
K3	CO4	Implement knowledge in identifying novel drug leads against allopathic medicine.

Programme Code: 05	Title: CERTIFICATE COURSE - BONSAI		
Course Code: 18CCB101	C.P. 1. INTRODUCTION TO BONSAI PRINCIPLES AND TECHNIQUES		
Batch 2018-2019	Hours / Week 2	Total Hours 30	Credits 2

COURSE OBJECTIVES

- To know the latest development in the field of Bonsai.
- To develop skills in the area of designing, styles and making of bonsai.
- To create knowledge on self employment through and entrepreneur skills.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Recognize about preliminary techniques about Bonsai.
K2	CO2	Understand the necessary skills to take care and maintain a Bonsai plant.
K3	CO3	Apply knowledge on Bonsai cultivation and marketing.
K3	CO4	Implement the acquired knowledge on commercial applications Bonsai

Programme Code: 05	Title: CERTIFICATE COURSE – BONSAI		
Course Code: 18CCB102	C.P. 2. ETHICS, VALUES AND MARKETING OF BONSAI		
Batch	**Hours / Week**	**Total Hours**	**Credits**
2018-2019	**2**	**30**	**2**

COURSE OBJECTIVES

- To know the ethical value of bonsai
- To understand the common and special types of bonsai.
- To recognize the marketing potential of bonsai in India

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Recognize the traditions and rituals values of bonsai
K2	CO2	Understand the types of commercial and aesthetic types of bonsai
K3	CO3	Implement knowledge on marketing practice of bonsai
K3	CO4	Describe the economic value of bonsai

Programme Code: 05		Title: CERTIFICATE COURSE - BONSAI		
Course Code: 18CCB1CL		C.Pr.1. Bonsai Techniques		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2018-2019	**I**	**2**	**30**	**2**

COURSE OBJECTIVES

- To identify the wild plants species for bonsai making.
- To select the suitable tools for bonsai making.
- To prepare the bonsai of market value.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K3	CO1	Understand the programmes being carried out to conserve species through bonsai techniques
K4	CO2	Investigate the current status of bonsai .
K5	CO3	Implement the acquired knowledge on commercial applications of Bonsai

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DEPARTMENT OF BOTANY (Aided)

COURSE OUTCOMES (CO)

B.Sc. BOTANY

For the students admitted
In the
Academic Year 2019-2020

Programme Code: 05		Title: B.Sc., BOTANY		
Course Code: 19UBO101		Core Paper: 1 - PLANT DIVERSITY - I		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2019-2020	**I**	**7**	**105**	**4**

COURSE OBJECTIVES

- To acquire knowledge on evolution of Thallophytes and to know about the diversity patterns of lower life forms on earth.
- To understand the distribution, structure, reproduction and life cycle patterns of lower life forms like algae, fungi and lichens.
- To know the economic value of lower organisms.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Differentiate and identify the algal species using algal pigments.
K2	CO2	Know about the distribution and mode of nutrition of fungal species.
K3	CO3	Gain thorough knowledge on the symbiotic nature of fungi associated with tree species and improves soil fertility.
K3	CO4	Apply their knowledge on the involvement of lichen as the indicators of pollution.

Programme Code: 05		Title: B.Sc., BOTANY		
Course Code: 19UBO202		Core Paper: 2 - PLANT DIVERSITY - II		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2019-2020	**II**	**7**	**105**	**4**

COURSE OBJECTIVES

- To know about the diversity of Cryptogams and Phanerogams.
- To understand the life cycle pattern of Bryophytes, Pteridophytes and Gymnosperms.
- To study the fossil remains of plants belonging to various eras of Palaeobotany.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Acquire knowledge on diversity among Bryophytes, Pteridophytes and Gymnosperms.
K2	CO2	Understand the internal structure and reproduction of Cryptogams and Phanerogams
K3	CO3	Apply the medicinal and economic knowledge of Bryophytes, Pteridophytes and Gymnosperms for the benefit of human welfare.
K3	CO4	Implement the knowledge on past evidences of fossils for the identification and also to determine the age of the fossil plants through radiocarbon dating.

Programme Code: 05		Title: B.Sc., BOTANY		
Course Code: 19UBO2CL		Core Practical: 1 - PLANT DIVERSITY - I & II		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2019-2020	**II**	**4**	**60**	**2**

COURSE OBJECTIVES

- To enable students to know about diversity of lower organisms.
- To understand the life cycle pattern of Bryophytes, Pteridophytes and Gymnosperms.
- To study the fossil remains of plants in the division of Palaeobotany.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K3	CO1	Explain the primitive and advanced Thallophytes.
K4	CO2	Analyze the internal organization of Cryptogams and Phanerogams.
K5	CO3	Examine the Mycorrhizal association in the roots of higher plants.

Programme Code : 05		Title: B.Sc., BOTANY		
Course code : 19UBO303		Core Paper: 3 – ANATOMY, EMBRYOLOGY OF ANGIOSPERMS, MICROTECHNIQUES		
Batch	**Semester**	**Hours/Week**	**Total Hours**	**Credits**
2019-2020	**III**	**5**	**75**	**5**

COURSE OBJECTIVES

- To learn the techniques of temporary microscopic slide preparations.
- To inculcate knowledge on the basics of tissues and anatomical features of plants.
- To understand the key aspects of reproductive systems of flowering plants.

COURSE OUTCOME

On successful completion of the course, the students will be able to

K1	CO1	Know about the various developmental aspects of the plants.
K2	CO2	Compare and identify the structural differences existing among the vascular plants.
K3	CO3	Familiarize the basic skills on fixation, dehydration, infiltration and staining process of the specimens.
K3	CO4	Imply the embryological and anatomical knowledge to differentiate the plant taxa.

Programme Code: 05		Title: B.Sc., BOTANY		
Course Code: 19UBO404		Core Paper: 4 - BIOPHYSICS AND BIOSTATISTICS		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2019-2020	**IV**	**5**	**75**	**5**

COURSE OBJECTIVES

- To understand the nature of light.
- To learn the basic principles of biostatistics.
- To impart knowledge to solve the biological problems.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Recognize the dual nature of the light and its reactions with the matter with reference to plants.
K2	CO2	Understand the basic concepts of thermodynamics.
K3	CO3	Impart knowledge on radioactivity and their effects on biological tissues.
K3	CO4	Apply the biostatistical formulae to solve the biological related problems.

Programme Code : 05		Title : B.Sc., Botany		
Course code : 19UBO4CM		Core Practical: 2 - Anatomy, Embryology of Angiosperms, Microtechniques, Biophysics and Biostatistics		
Batch	**Semester**	**Hours/Week**	**Total Hours**	**Credits**
2019 - 2020	**IV**	**2**	**30**	**2**

COURSE OBJECTIVES

- To know the role of fixatives and slide preparation techniques.
- To learn about the special structures associated with the plants.
- To understand role of light in photosynthesis and solve the biological related problems.

COURSE OUTCOME

K3	CO1	Analyze various structures of the internal and external structures of the plants.
K4	CO2	Dissect different stages of embryos of *Tridax* plant.
K5	CO3	Evaluate the normal distribution pattern of a given population.

Programme Code: 05		Title: B.Sc., BOTANY		
Course Code:19UBO4S2		Skill Based Subject: II - HORTICULTURE		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2019-2020	**IV**	**2**	**30**	**3**

COURSE OBJECTIVES

- To learn about the propagation methods of horticultural crops.
- To study the various types of gardening, landscaping and their management.
- To know about commercial floriculture and their significance.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Describe various horticultural practices
K2	CO2	Understand solutions to develop a wide variety of plants through vegetative propagules.
K3	CO3	Develop bonsai plants using various techniques.
K3	CO4	Preserve food and vegetables using suitable techniques for the commercial uses throughout the year.

Programme Code: 05		Title: B.Sc., BOTANY		
Course Code : 19UBO505		Core Paper: 5 - Bioinstrumentation		
Batch 2019-2020	Semester V	Hours / Week 4	Total Hours 60	Credits 4

Course Objectives

1. To seed the basic knowledge about instruments
2. To make students understand the applications of instruments in Botany
3. To train the students handle and maintain the instruments

Course Outcomes

K1	CO1	Students are trained to remember each and every topics by comparative studies
K2	CO2	Students are taught with models and audio visuals to understand the concept easily
K3	CO3	Direct applications and benefits of instruments are discussed with hands-on training to students
K4	CO4	Critical steps and important calculations are taught and asked the students to analyze the same

Programme Code: 05		Title: B.Sc., BOTANY		
Course Code:19UBO506		Core Paper: 6 - TAXONOMY OF ANGIOSPERMS AND ECONOMIC BOTANY		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2019-2020	**I**	**7**	**105**	**5**

COURSE OBJECTIVES

- To recognize the plant families of major flowering plants and their diagnostic features.
- To acquire basic knowledge on the principles of phylogeny and biosystematics.
- To familiarize knowledge on plants with immense economic values.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Acquire better knowledge on plant identification.
K2	CO2	Understand nomenclature principles of flowering plants.
K3	CO3	Gain hands on experience on herbarium preparation techniques.
K3	CO4	Familarize immense knowledge on economic importance of higher plants.

Programme Code: 05		Title: B.Sc., BOTANY		
Course Code: 19UBO507		Core Paper: 7 - CYTOLOGY, GENETICS & PLANT BREEDING		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2019-2020	**V**	**4**	**60**	**5**

COURSE OBJECTIVES

- To learn the cellular details, cell organelles and their functions.
- To acquire knowledge on genes and their interactions.
- To gain knowledge on plant breeding methods and crop improvement proframmes.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Familiarize structural organizations of cells and cellular mechanisms.
K2	CO2	Understand and explain scientific principles behind nature and function of genes and their process of inheritance.
K3	CO3	Apply the acquired knowledge on character exchanges among the individuals due to crossing over.
K3	CO4	Implement the plant breeding techniques for crop improvement.

Programme Code: 05		Title: B.Sc., BOTANY		
Course Code: 19UBO508		Core Paper: 8 - PLANT ECOLOGY, PHYTOGEOGRAPHY AND RESOURCE CONSERVATION		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2019-2020	**V**	**4**	**60**	**5**

COURSE OBJECTIVES

- To understand the principles of ecosystem.
- To acquire basic knowledge about community succession
- To ensure knowledge on resource conservation.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Pertain knowledge on principle factors controlling the environment.
K2	CO2	Understand the distribution of plant species across the country.
K3	CO3	Assess the natural vegetational structures of the given geographical locations.
K3	CO4	Explore knowledge on natural resources available for the benefit of mankind.

Programme Code: 05		Title : B.Sc., BOTANY		
Course code : 19UBO5CN		Core Practical: 3 – BIOINSTRUMENTATION, CYTOLOGY, GENETICS AND PLANT BREEDING		
Batch	**Semester**	**Hours/Week**	**Total Hours**	**Credits**
2019-2020	**V**	**4**	**60**	**2**

COURSE OBJECTIVES

- To insist basic knowledge on the instruments
- To learn principles and applications of instruments
- To provide hands-on techniques on instruments
- To study the cellular details, genetic constitution and plant breeding techniques.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K3	CO1	Apply knowledge on handling and troubleshooting of instruments.
K4	CO2	Examine the various parts and functional units of instruments.
K5	CO3	Analyze the progress of cell division and their significance for the manipulation of higher yielding crop plants

Programme Code: 05		Title: B.Sc., BOTANY		
Course Code: 19UBO609		Core Paper: 9 – BIOCHEMISTRY AND BIOINFORMATICS		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2019-2020	**VI**	**5**	**75**	**4**

COURSE OBJECTIVES

- To study the structure of atom and chemical bonds
- To learn the metabolism of chemical reactions in a cell
- To understand biochemical techniques.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Gain knowledge on chemical bonds, atoms and molecules.
K2	CO2	Understand the chemical structure of macro molecules.
K3	CO3	Applying the nature of enzymes in biochemical pathways
K3	CO4	Acquire and apply knowledge on the biosynthesis of secondary metabolites.

Programme Code: 05		Title : B.Sc., BOTANY		
Course code : 19UBO610		Core Paper: 10 - PLANT PHYSIOLOGY		
Batch	**Semester**	**Hours/Week**	**Total Hours**	**Credits**
2019-2020	**VI**	**5**	**75**	**5**

COURSE OBJECTIVES

- To study the structure of atoms and chemical bonds.
- To know the secondary metabolites in plants.
- To study about water potential and its components.

COURSE OUTCOME

On successful completion of the course, the students will be able to

K1	CO1	Gain the knowledge on the relationship of complementary metabolic process in energy acquisition.
K2	CO2	Understand the water potential and its effects on cellular functions.
K3	CO3	Apply the knowledge on physiological mechanisms of growth regulators in plants.
K3	CO4	Demonstrate detailed understanding of the physiological mechanisms involved in the uptake and transport of water.

Programme Code: 05		Title: B.Sc., BOTANY		
Course Code: 19UBO611		Core Paper: 11 - MICROBIOLOGY AND PLANT PATHOLOGY		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2019-2020	**VI**	**5**	**75**	**4**

COURSE OBJECTIVES

- To know the major groups of microbes.
- To understand the exploitation of microbes in industries.
- To learn the different pathogenic organisms of plants causing various diseases.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Acquire knowledge on the role of prokaryotic organisms.
K2	CO2	Understand the use of microbes in industries for the welfare of mankind.
K3	CO3	Apply the knowledge on microbial technology for the production of antibiotics.
K3	CO4	Implement knowledge on management of plant diseases to increase crop yield.

Programme Code: 05		Title : B.Sc., BOTANY		
Course code : 19UBO6CO		Core Practical: 4 - Taxonomy of Angiosperms, Economic Botany, Cytology, Genetics, Plant Breeding, Plant Ecology, Plant Phytogeography and Resource Conservation		
Batch	**Semester**	**Hours/Week**	**Total Hours**	**Credits**
2019 - 2020	**VI**	**4**	**60**	**2**

COURSE OBJECTIVES

- To learn the morphological, taxonomical and economic values of the plants.
- To study the cellular details, genetic constitution and breeding techniques.
- To impart knowledge on the determination of types of vegetations using quantitative ecological characters.

COURSE OUTCOMES

K3	CO1	Apply knowledge to segregate species variation using dichotomous keys.
K4	CO2	Analyze the progress of cell divisions and their significance for the manipulation of higher yielding crop plants.
K5	CO3	Determine the distribution of vegetations in a given habitat using various quadrat methods.

Programme Code: 05		Title : B.Sc., BOTANY		
Course code : 19UBO6CP		Core Practical: 5 - BIOCHEMISTRY, PLANT PHYSIOLOGY, MICROBIOLOGY AND PLANT PATHOLOGY		
Batch	**Semester**	**Hours/Week**	**Total Hours**	**Credits**
2019-2020	**VI**	**4**	**60**	**2**

COURSE OBJECTIVES

- To acquire skills on handling of the instruments.
- To elucidate the pigments using chromatographic techniques.
- To learn metabolic process of the plants.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K3	CO1	Apply knowledge on instrumentation techniques.
K4	CO2	Analyze the biological samples using biochemical experiments.
K5	CO3	Examine the various physiological activities of the plants.

Programme Code: 05		Title: B.Sc., BOTANY		
Course Code:19UBO6S3		Skill Based Subject: III - CULTIVATION AND MARKETING OF MEDICINAL PLANTS		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2019-2020	**VI**	**2**	**30**	**3**

COURSE OBJECTIVES

- To promote conservation strategies recommended by various agencies.
- To understand the medicinal values of various parts of the medicinal plants.
- To understand the present scenario on marketing of medicinal plants.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Recognize *in situ* and *ex situ* conservation of various medicinal plants.
K2	CO2	Create awareness for utilization of herbal medicines for home remedies.
K3	CO3	Increase public awareness about the efficacies of herbal drugs and their intellectual property rights.
K3	CO4	Implement suitable methods for the cultivation of more and more wild indigenous and endemic medicinal plants.

Programme Code: 05		Title: B.Sc., BOTANY		
Course Code: 19UBO6Z1		PROJECT WORK & VIVA - VOCE		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2019-2020	**VI**	**4**	**60**	**5**

COURSE OBJECTIVES

- To know the practical problems in various fields of Botany.
- To understand to collect the related data in the selected fields.
- To apply suitable skill to solve the selected problems through proper execution.

COURSE OUTCOME

On successful completion of the project work, the students will be able to

K3	CO1	Applying theoretical knowledge in lab oriented experiments.
K4	CO2	Analyzing the importance of project while collecting the necessary data.
K5	CO3	Evaluating variations between the theories and the experiments.
K5	CO4	Executing appropriate methods to get the correct interpretation to present the results.

Programme Code: 05	Title: B.Sc., BOTANY		
	Major Elective: 1 - FORESTRY		
Batch 2019-2020	Hours / Week 4	Total Hours 60	Credits 5

COURSE OBJECTIVES

- To understand the basic concepts of forest and their distribution types.
- To acquire knowledge on forest resources and their utilization.
- To gain knowledge on laws of conservation of forests.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Recognize the importance of forest produce to mankind.
K2	CO2	Understand the economic value of forest and their importance to the society.
K3	CO3	Reclamation of wastelands with suitable tree species.
K3	CO4	Implement the economic benefits of trees in day to day life

Programme Code: 05	Title: B.Sc., BOTANY		
	Major Elective: 2 - BIOTECHNOLOGY		
Batch	**Hours / Week**	**Total Hours**	**Credits**
2019-2020	**4**	**60**	**5**

COURSE OBJECTIVES

- To familiarize the fundamental principles of biotechnology.
- To obtain knowledge on various developments and potential applications of gene cloning technology.
- To know the basic principles employed for the production of biogoods.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Demonstrate the basic concepts of biotechnology
K2	CO2	Understand the role and importance of biotechnological tools for the production of bioproducts.
K3	CO3	Implement the basic skills and techniques related to gene cloning for the development of transgenic plants.
K3	CO4	Adoptation of conservation strategies through micropropagation techniques and to protect RET listed plant species.

Programme Code: 05	Title: B.Sc., BOTANY		
	Major Elective: 3 - FOOD SCIENCE		
Batch	**Hours / Week**	**Total Hours**	**Credits**
2019-2020	**4**	**60**	**5**

COURSE OBJECTIVES

- To know about the food groups.
- To understand the food processing technology.
- To analyze and communicate food issues.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Acquire manufacturing processes and technologies used in the production of food products.
K2	CO2	Understand the knowledge on the process of food product development and their environmental consideration.
K3	CO3	Explain the functional properties of food in human nutrition.
K3	CO4	Develop skills in researching, analyzing and communicating food issues.

Programme Code: 05	Title: B.Sc., BOTANY		
	Major Elective: 4 - SEED BIOLOGY		
Batch **2019-2020**	**Hours / Week** **4**	**Total Hours** **60**	**Credits** **5**

COURSE OBJECTIVES

- To study the structure of angiospermic seeds
- To analyze various products produced by the seeds.
- To examine the germination capacity of the seeds.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Recognize the chemical and physical properties of seeds.
K2	CO2	Understand the factors responsible for seed germination.
K3	CO3	Apply the various methods of processing of seeds for storage.
K3	CO4	Implement knowledge to break the seed dormancy and to enhance the plant growth.

Programme Code: 05	Title: B.Sc., BOTANY		
	Major Elective: 5 - PHARMACOGNOSY		
Batch	**Hours / Week**	**Total Hours**	**Credits**
2019-2020	**4**	**60**	**5**

COURSE OBJECTIVES

- To study the drug development from medicinal plants.
- To understand the traditional systems of medicines like Ayurveda, Siddha & Unani.
- To know the pharmacological actions of plant drugs.

COURSE OUTCOME

On successful completion of the course, the students will be able to

K1	CO1	Acquire knowledge on the therapeutic uses of plant drugs.
K2	CO2	Understand the traditional and modern system of medicine.
K3	CO3	Relates physiological action of various plant drugs.
K3	CO4	Recognize route of drug administration and its pharmaceutical dosage forms.

Programme Code: 05	Title: B.Sc., BOTANY		
	Major Elective 6 - MUSHROOM CULTIVATION TECHNOLOGY		
Batch	**Hours / Week**	**Total Hours**	**Credits**
2019-2020	**4**	**60**	**5**

COURSE OBJECTIVES

- To understand the Importance of mushrooms.
- To learn the methodology involved in mushroom cultivation.
- To know the disease management.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Recognize the nutritive, medicinal and food values of mushrooms.
K2	CO2	Determine suitable climate and cultivation techniques for different mushrooms.
K3	CO3	Relate knowledge on designing farming houses for various mushrooms.
K3	CO4	Apply knowledge on processing and storage for better marketing.

Programme Code: 05		For B.Sc., ZOOLOGY		
Course Code: 19UBO1A1		Allied-1 Botany: 1 (PHYCOLOGY, MYCOLOGY, PLANT PATHOLOGY, BRYOPHYTES, PTERIDOPHYTES & GYMNOSPERMS) (FOR ZOOLOGY STUDENTS)		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2019-2020	**I**	**5**	**105**	**4**

COURSE OBJECTIVES

- To study the classification of Cryptogams & Gymnosperms.
- To learn the structure and life cycle patterns of primitive to advanced life forms.
- To impart knowledge on the economic values of plants.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Gain knowledge on disease causing microorganisms.
K2	CO2	Understand the life cycle patterns of Cryptogams and Gymnosperms.
K3	CO3	Explore the economic importance of lower life forms.
K3	CO4	Apply their knowledge to identify plant diseases and their control measures.

Programme Code: 05		For B.Sc., ZOOLOGY		
Course Code: 19UBO2A2		Allied-2 Botany: 2 (ANATOMY, EMBRYOLOGY, TAXONOMY OF ANGIOSPERMS, PHYSIOLOGY AND ENVIRONMENTAL BOTANY) (FOR ZOOLOGY STUDENTS)		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2019-2020	**II**	**5**	**105**	**4**

COURSE OBJECTIVES

- To differentiate the anatomical and reproductive features of monocot and dicots.
- To acquire knowledge on the classification and nomenclature of Angiosperms.
- To understand physiological process and metabolism in plants.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Recognize structural organization and morphological variations among the Angiospermic taxa.
K2	CO2	Understand the use of keys and manuals for identifying any unknown plants at species level.
K3	CO3	Application of micronutrients and growth regulators for the development of plants.
K3	CO4	Explore knowledge on ecosystems, environmental pollution and soil conservation strategies.

Programme Code: 05		For B.Sc., ZOOLOGY		
Course code : 19UBO2AL		ALLIED PRACTICAL BOTANY- I & II		
Batch 2019 - 2020	Semester II	Hours/Week 2	Total Hours 60	Credits 2

COURSE OBJECTIVES

- To acquire knowledge on the morphological and anatomical features of vascular plants.
- To learn the basic concepts and principles of ecosystem.
- To create basic skills on biosystematics and herbarium preparation techniques.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K3	**CO1**	Apply knowledge on the identification of lower life forms.
K4	**CO2**	Analyze various diseases and their impact on crop plants
K5	**CO3**	Examine physiological process that occur in plant life .

Programme Code: 05		For B.Sc., ZOOLOGY, BIOCHEMISTRY AND BIOTECHNOLOGY		
Course Code: 19UBO5X1		Extra Departmental Course (EDC) - MEDICINAL BOTANY AND HUMAN WELFARE		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2019-2020	**V**	**2**	**30**	**3**

COURSE OBJECTIVES

- To study the Indian system of traditional medicine.
- To gain knowledge on pharmacognosy of medicinal plants.
- To familiarize cultivation technologies of medicinal plants.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Recognize crude drugs used in traditional system of medicine.
K2	CO2	Understand the therapeutic potential of crude drugs.
K3	CO3	Apply the knowledge in the cultivation practices of medicinal plants.
K3	CO4	Implement knowledge in identifying novel drug leads against allopathic medicine.

Programme Code: 05	Title: CERTIFICATE COURSE – BONSAI		
Course Code: 19CCB101	C.P. 1. INTRODUCTION TO BONSAI PRINCIPLES AND TECHNIQUES		
Batch 2019-2020	Hours / Week 2	Total Hours 30	Credits 2

COURSE OBJECTIVES

- To know the latest development in the field of Bonsai.
- To develop skills in the area of designing, styles and making of bonsai.
- To create knowledge on self employment through and entrepreneur skills.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Recognize about preliminary techniques about Bonsai.
K2	CO2	Understand the necessary skills to take care and maintain a Bonsai plant.
K3	CO3	Apply knowledge on Bonsai cultivation and marketing.
K3	CO4	Implement the acquired knowledge on commercial applications Bonsai

Programme Code: 05	Title: CERTIFICATE COURSE – BONSAI		
Course Code: 19CCB102	C.P. 2. ETHICS, VALUES AND MARKETING OF BONSAI		
Batch	**Hours / Week**	**Total Hours**	**Credits**
2019-2020	**2**	**30**	**2**

COURSE OBJECTIVES

- To know the ethical value of bonsai
- To understand the common and special types of bonsai.
- To recognize the marketing potential of bonsai in India

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Recognize the traditions and rituals values of bonsai
K2	CO2	Understand the types of commercial and aesthetic types of bonsai
K3	CO3	Implement knowledge on marketing practice of bonsai
K3	CO4	Describe the economic value of bonsai

Programme Code: 05		Title: CERTIFICATE COURSE - BONSAI		
Course Code: 19CCB1CL		C.Pr.1. Bonsai Techniques		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2019-2020	**I**	**2**	**30**	**2**

COURSE OBJECTIVES

- To identify the wild plants species for bonsai making.
- To select the suitable tools for bonsai making.
- To prepare the bonsai of market value.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K3	CO1	Understand the programmes being carried out to conserve species through bonsai techniques
K4	CO2	Investigate the current status of bonsai .
K5	CO3	Implement the acquired knowledge on commercial applications of Bonsai