

RANIGANJ GIRLS' COLLEGE
DEPARTMENT OF BOTANY

COURSE LEARNING OUTCOMES
LEARNING OUTCOME BASED CURRICULUM
FRAMEWORK (LOCF)
UNDER THE
CHOICE BASED CREDIT SYSTEM (CBCS)
OF
KAZI NAZRUL UNIVERSITY

BSC HONOURS IN BOTANY
COURSE LEARNING OUTCOMES

Semester – I

Course Name: Phycology and Microbiology

Course Code: BSCHBOTC101

Course Type: Core	Course Details: CC-1		L-T-P: 4-0-4		
Credit: 6	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		30	10	20	40

Course Learning Outcomes:

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

- Develop understanding on the concept of microbial nutrition
- Classify viruses based on their characteristics and structures
- Develop critical understanding of plant diseases and their remediation.
- Examine the general characteristics of bacteria and their cell reproduction/recombination
- Increase the awareness and appreciation of human friendly viruses, bacteria, algae and their economic importance
- Conduct experiments using skills appropriate to subdivisions

Course Name: Biomolecules and Cell Biology

Course Code: BSCHBOTC102

Course Type: Core	Course Details: CC-2		L-T-P: 4-0-4		
Credit: 6	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		30	10	20	40

Course Learning Outcomes:

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

- Develop understanding on chemical bonding among molecules
- Identify the concept that explains chemical composition and structure of cell wall

and membrane

- Classify the enzymes and explain mechanism of action and structure
- Compare the structure and function of cells & explain the development of cells
- Describe the relationship between the structure and function of biomolecules

Semester – II

Course name: Mycology And Phytopathology

Course Code: BSCHBOTC201

Course Type: Core	Course Details: CC-3		L-T-P: 4-0-4		
Credit: 6	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		30	10	20	40

Course Learning Outcomes:

On completion of this course, the students will be able to;

- Identify true fungi and demonstrate the principles and application of plant pathology in the control of plant disease.
- Demonstrate skills in laboratory, field and glasshouse work related to mycology and plant pathology.
- Develop an understanding of microbes, fungi and lichens and appreciate their adaptive strategies
- Identify the common plant diseases according to geographical locations and device control measures

Course name: Archegoniatae: Bryophytes, Pteridophytes, Gymnosperms

Course Code: BSCHBOTC202

Course Type: Core	Course Details: CC-4		L-T-P: 4-0-4		
Credit: 6	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		30	10	20	40

Course Learning Outcomes:

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

- Demonstrate an understanding of archegoniatae, Bryophytes, Pteridophytes and Gymnosperms
- Develop critical understanding on morphology, anatomy and reproduction of Bryophytes, Pteridophytes and Gymnosperms
- Understanding of plant evolution and their transition to land habitat.
- Demonstrate proficiency in the experimental techniques and methods of appropriate analysis of Bryophytes, Pteridophytes, Gymnosperms

Semester – III

Course name: Anatomy of Angiosperms

Course Code: BSCHBOTC301

Course Type: Core	Course Details: CC-5		L-T-P: 4-0-4		
Credit: 6	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		30	10	20	40

Course Learning Outcomes:

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

- Develop an understanding of concepts and fundamentals of plant anatomy
- Examine the internal anatomy of plant systems and organs
- Develop critical understanding on the evolution of concept of organization of shoot and root apex.
- Analyze the composition of different parts of plants and their relationships
- Evaluate the adaptive and protective systems of plants

Course name: Morphology and Reproductive Biology of Angiosperms

Course Code: BSCHBOTC302

Course Type: Core	Course Details: CC-6		L-T-P: 4-0-4		
Credit: 6	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		30	10	20	40

Course Learning Outcomes:

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

- To know about different plants organ like root, stem and leaves and their importance.
- To learn about various plants parts, embryonic development, breeding activity and conservation techniques.
- Recall the history of reproductive biology of angiosperms & recognize the importance of genetic and molecular aspects of flower development
- Understand structure and functions of anther wall and pollen wall
- Evaluate the special structures of Ovule
- Solve Self-incompatibility in Pollination and fertilization & relate between Embryo, Endosperm and Seed
- Comprehend the causes of Polyembryony and apomixes with its classification
- To learn structure and function of pollen and its role in fertilization, forensic science, melissopalynology.

Course name: Plant Systematics

Course Code: BSCHBOTC303

Course Type: Core	Course Details: CC-7		L-T-P: 4-0-4		
Credit: 6	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		30	10	20	40

Course Learning Outcomes:

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

- Classify Plant systematics and recognize the importance of herbarium and Virtual herbarium
- Evaluate the Important herbaria and botanical gardens
- Interpret the rules of ICN in botanical nomenclature
- Assess terms and concepts related to Phylogenetic Systematics
- Generalize the characters of the families according to Bentham & Hooker's system of classification

Semester – IV

Course name: Plant Ecology and Phytogeography

Course Code: BSCHBOTC401

Course Type: Core	Course Details: CC-8		L-T-P: 4-0-4		
Credit: 6	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		30	10	20	40

Course Learning Outcomes:

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

- Understand core concepts of biotic and abiotic
- Classify the soils on the basis of physical, chemical and biological components
- Analysis the phytogeography or phytogeographical division of India
- Evaluate energy sources of ecological system
- Assess the adaptation of plants in relation to light, temperature, water, wind and fire.
- Conduct experiments using skills appropriate to subdivisions

Course name: Economic Botany and Pharmacognosy

Course Code: BSCHBOTC402

Course Type: Core	Course Details: CC-9		L-T-P: 4-0-4		
Credit: 6	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		30	10	20	40

Course Learning Outcomes:

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

- Understand core concepts of Economic Botany and relate with environment, populations, communities, and ecosystems
- Develop critical understanding on the evolution of concept of organization of apex new crops/varieties, importance of germplasm diversity, issues related to access and ownership
- Develop a basic knowledge of taxonomic diversity and important families of useful plants

- Increase the awareness and appreciation of plants & plant products encountered in everyday life.
- Appreciate the diversity of plants and the plant products in human use.
- To know about medicinal properties and uses of plants by folklore and ayurveda system.
- Ability of conserve rare and threatened plant species both in in-vivo and in-vitro conditions.

Course name: Agronomy
Course Code: BSCHBOTC403

Course Type: Core	Course Details: CC-10		L-T-P: 4-0-4		
Credit: 6	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		30	10	20	40

Course Learning Outcomes:

On the completion of the course the students will be able to:

- Understand the concept of agronomy and sustainable agriculture.
- Analyze different aspects diversified agriculture and farm enterprises, production technology of vegetation and flowers.
- Examine the implications integrated farming system along with production economics and farm management
- Evaluate the IT communication and diffusion of agricultural innovation

Semester – V
Course name: Plant Physiology and Metabolism
Course Code: BSCHBOTC501

Course Type: Core	Course Details: CC-11		L-T-P: 4-0-4		
Credit: 6	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		30	10	20	40

Course Learning Outcomes:

On completion of this course, the students will be able to;

- Understand Water relation of plants with respect to various physiological processes.

- Explain chemical properties and deficiency symptoms in plants
- Classify aerobic and anaerobic respiration
- Explain the significance of Photosynthesis and respiration
- Assess dormancy and germination in plants
- Students acquire the adequate knowledge of metabolism in plants.
- Explain the ATP-Synthesis
- To acquire adequate knowledge about translocation in plants, carbon dioxide concentrating mechanisms, growth regulators and flowering of plants.

Course name: Cytology and Genetics

Course Code: BSCHBOTC502

Course Type: Core	Course Details: CC-12		L-T-P: 4-0-4		
Credit: 6	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		30	10	20	40

Course Learning Outcomes:

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

- Have conceptual understanding of laws of inheritance, genetic basis of loci and alleles and their linkage.
- Comprehend the effect of chromosomal abnormalities in numerical as well as structural changes leading to genetic disorders.
- Develop critical understanding of chemical basis of genes and their interactions at population and evolutionary levels.
- Analyze the effect of mutations on gene functions and dosage.
- Examine the structure, function and replication of DNA.

Semester – VI

Course name: Molecular Biology

Course Code: BSCHBOTC601

Course Type: Core	Course Details: CC-13		L-T-P: 4-0-4		
Credit: 6	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		30	10	20	40

Course Learning Outcomes:

On completion of this course, the students will be able to;

- Analyse the structures and chemical properties of DNA and RNA through various historic experiments.
- Differentiate the main types of prokaryotes through their grouping abilities and their characteristic
- Evaluate the experiments establishing central dogma and genetic code.
- Gain an understanding of various steps in transcription, protein synthesis and protein modification.

Course name: Plant Biotechnology and Genetic Engineering Course Code:

BSCHBOTC602

Course Type: Core	Course Details: CC-14		L-T-P: 4-0-4		
Credit: 6	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		30	10	20	40

Course Learning Outcomes:

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

- Understand the core concepts and fundamentals of plant biotechnology and genetic engineering
- Develop their competency on different types of plant tissue culture
- Analyze the enzymes and vectors for genetic manipulations

- Examine gene cloning and evaluate different methods of gene transfer
- Critically analyze the major concerns and applications of transgenic technology
- To learn about gene cloning, recombinant DNA technology and bioinformatics includes recent biotechnological advancement related to genomics and proteomics.
- Acquire the knowledge about gene transfer and applications of biotechnology.
- Acquire the knowledge about tissue culture techniques, restriction digestion, isolation and electrophoresis of plasmid DNA.

Discipline Specific Elective Course

Semester - V

Course Name: Analytical Techniques in Plant Sciences

Course Code: BSCHBOTDSE501

Course Type: Core	Course Details: DSE-501		L-T-P: 4-0-4		
Credit: 6	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		30	10	20	40

Course Learning Outcomes:

On completion of this course the students will be able to:

- Develop conceptual understanding of cell wall degradation enzymes and cell fractionation.
- Classify different types of chromatography techniques.
- Explain the principles of Light microscopy, compound microscopy, Fluorescence microscopy and confocal microscopy
- Apply suitable strategies in data collections and disseminating research findings.

Course Name: Bioinformatics

Course Code: BSCHBOTDSE502

Course Type: Core	Course Details: DSE-502		L-T-P: 4-0-4		
Credit: 6	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		30	10	20	40

Course Learning Outcomes:

On completion of this course the students will be able to:

- Understand the concept of databases and use of different public domain for DNA and proteins sequence retrieval.
- Understand the concept of pairwise alignment of DNA sequences using algorithms.
- Explain the structure of proteins homology modeling approach using SWISS MODEL and SWISS-PDB.
- Reflect upon the role of various models in molecular evolution.
- Analyze the role of (QSAR) techniques in Drug Design.

Course Name: Stress Biology
Course Code: BSCHBOTDSE503

Course Type: Core	Course Details: DSE-503		L-T-P: 4-0-4		
Credit: 6	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		30	10	20	40

Course Learning Outcomes:

On completion of this course, students will be able to:

- Develop the understanding of concept of stress, stress factors and resistance mechanisms.
- Explain different types of stress with examples.
- Develop the ability for critical appraisal of various physiological mechanisms that protect the plant from environmental stress i.e. adaptation, avoidance and tolerance.
- Analyze the role of production and scavenging mechanisms

Course Name: Plant Breeding
Course Code: BSCHBOTDSE504

Course Type: Core	Course Details: DSE-504		L-T-P: 4-0-4		
Credit: 6	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		30	10	20	40

Course Learning Outcomes:

On completion of this course students will be able to:

- Develop conceptual understanding of plant genetic resources, plant breeding, gene bank and gene pool.
- Familiarize with genetic basis of heterosis.
- Classify Sexual and Asexual modes of reproduction.
- Explain monogenic and polygenic inheritance
- Reflect upon the role of various non- conventional methods used in crop improvement.

Semester - VI

Course Name: Research Methodology

Course Code: BSCHBOTDSE601

Course Type: Core	Course Details: DSE-601		L-T-P: 4-0-4		
Credit: 6	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		30	10	20	40

Course Learning Outcomes:

At the end of the course the students will be able to,

- Understand the concept of research and different types of research in the context of biology
- Develop laboratory experiment related skills.
- Develop competence on data collection and process of scientific documentation
- Analyze the ethical aspects of research
- Evaluate the different methods of scientific writing and reporting

Course Name: Biostatistics

Course Code: BSCHBOTDSE602

Course Type: Core	Course Details: DSE-602		L-T-P: 4-0-4		
Credit: 6	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		30	10	20	40

Course Learning Outcomes:

At the end of the course the students will be able to,

- Comprehend the fundamental concepts related to descriptive and inferential biostatistics.
- Develop skills in data tabulation, its treatment, analysis, interpretation and graphical representation of data.
- Analyze the implications of inferential statistics in biology.
- Develop their competence in hypothesis testing and interpretation.

Course Name: Natural Resource Management

Course Code: BSCHBOTDSE603

Course Type: Core	Course Details: DSE-603		L-T-P: 4-0-4		
Credit: 6	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		30	10	20	40

Course Learning Outcomes:

At the end of the course the students will be able to,

- Understand the concept of different natural resources and their utilization.
- Critically analyze the sustainable utilization land, water, forest and energy resources.
- Evaluate the management strategies of different natural resources.
- Reflect upon the different national and international efforts in resource management and their conservation

Course Name: Horticultural Practices and Post-harvest Technology

Course Code: BSCHBOTDSE604

Course Type: Core	Course Details: DSE-604		L-T-P: 4-0-4		
Credit: 6	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		30	10	20	40

Course Learning Outcomes:

At the end of the course the students will be able to,

- Understand the concept of different types of horticultural practices for value addition
- Visualize the post-harvest problems likely to be confronted
- Know the tricks of the trade and how to increase the longevity of the produce

**SEC- Skill Enhancement Course -
Semester - III**

Course name: Biofertilizers

Course code – BSCHBOTSEC301

Course Type: Core	Course Details: SEC-301		L-T-P: 4-0-0		
Credit: 4	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		-	10	-	40

Course Learning Outcomes:

On the completion of this course, the students will be able to;

- Develop their understanding on the concept of bio-fertilizer
- Identify the different forms of biofertilizers and their uses
- Compose the Green manuring and organic fertilizers
- Develop the integrated management for better crop production by using both nitrogenous and phosphate bio fertilizers and vesicular arbuscular mycorrhizal (VAM).
- Interpret and explain the components, patterns, and processes of bacteria for growth in crop production

Course name: Ethnobotany

Course code – BSCHBOTSEC302

Course Type: Core	Course Details: SEC-302		L-T-P: 4-0-0		
Credit: 4	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		-	10	-	40

Course Learning Outcomes:

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

- Conceptualize ethnobotany as an interdisciplinary science
- Restate the established methodology of ethnobotany studies
- Categories various indigenous ethnic groups and their environmental practices.
- Understand the legalities associated with ethnobotany.

Semester - IV

Course name: Plant Diversity and Human welfare

Course code – BSCHBOTSEC401

Course Type: Core	Course Details: SEC-401		L-T-P: 4-0-0		
Credit: 4	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		-	10	-	40

Course Learning Outcomes:

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

- Develop understanding of the concept and scope of plant biodiversity
- Identify the causes and implications of loss of biodiversity
- Apply skills to manage plant biodiversity
- Utilize various strategies for the conservation of biodiversity

- Conceptualize the role of plants in human welfare with special reference to India

Course name: Mushroom culture technology

Course code – BSCHBOTSEC402

Course Type: Core	Course Details: SEC-402		L-T-P: 4-0-0		
Credit: 4	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		-	10	-	40

Course Learning Outcomes:

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

- Recall various types and categories of mushrooms.
- Demonstrate various types of mushroom cultivating technologies.

- Examine various types of food technologies associated with mushroom industry.
- Value the economic factors associated with mushroom cultivation
- Device new methods and strategies to contribute to mushroom production.

BSC PROGRAM IN BOTANY
COURSE LEARNING OUTCOMES

Semester – I

Course Name: Phycology and Microbiology

Course Code: BSCPBOC101

Course Type: Core	Course Details: CC-1		L-T-P: 4-0-4		
Credit: 6	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		30	10	20	40

Course Learning Outcomes:

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

- Develop understanding on the concept of microbial nutrition
- Classify viruses based on their characteristics and structures
- Develop critical understanding of plant diseases and their remediation.
- Examine the general characteristics of bacteria and their cell reproduction/ recombination
- Increase the awareness and appreciation of human friendly viruses, bacteria, algae and their economic importance
- Conduct experiments using skills appropriate to subdivisions

Semester – II

Course name: Mycology And Phytopathology

Course Code: BSCPBOC201

Course Type: Core	Course Details: CC-2		L-T-P: 4-0-4		
Credit: 6	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		30	10	20	40

Course Learning Outcomes:

On completion of this course, the students will be able to;

- Identify true fungi and demonstrate the principles and application of plant pathology in the control of plant disease.
- Demonstrate skills in laboratory, field and glasshouse work related to mycology and plant pathology.
- Develop an understanding of microbes, fungi and lichens and appreciate their adaptive strategies
- Identify the common plant diseases according to geographical locations and device control measures

Semester-III

Course name: Archegoniatae: Bryophytes, Pteridophytes, Gymnosperms

Course Code: BSCPBOC301

Course Type: Core	Course Details: CC-3		L-T-P: 4-0-4		
Credit: 6	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		30	10	20	40

Course Learning Outcomes:

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

- Demonstrate an understanding of archegoniatae, Bryophytes, Pteridophytes and Gymnosperms
- Develop critical understanding on morphology, anatomy and reproduction of Bryophytes, Pteridophytes and Gymnosperms
- Understanding of plant evolution and their transition to land habitat.
- Demonstrate proficiency in the experimental techniques and methods of appropriate analysis of Bryophytes, Pteridophytes, Gymnosperms

Semester-IV

Course name: Plant Systematics

Course Code: BSCPBOTC401

Course Type: Core	Course Details: CC-4		L-T-P: 4-0-4		
Credit: 6	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		30	10	20	40

Course Learning Outcomes:

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

- Classify Plant systematics and recognize the importance of herbarium and Virtual herbarium
- Evaluate the Important herbaria and botanical gardens
- Interpret the rules of ICN in botanical nomenclature
- Assess terms and concepts related to Phylogenetic Systematics
- Generalize the characters of the families according to Bentham & Hooker's system of classification

Semester – V

Course name: Anatomy of Angiosperms

Course Code: BSCPBOTC501

Course Type: Core	Course Details: CC-5		L-T-P: 4-0-4		
Credit: 6	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		30	10	20	40

Course Learning Outcomes:

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

- Develop an understanding of concepts and fundamentals of plant anatomy
- Examine the internal anatomy of plant systems and organs
- Develop critical understanding on the evolution of concept of organization of shoot and root apex.
- Analyze the composition of different parts of plants and their relationships

- Evaluate the adaptive and protective systems of plants

Course name: Plant Physiology

Course Code: BSCPBOTC502

Course Type: Core	Course Details: CC-5		L-T-P: 4-0-4		
Credit: 6	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		30	10	20	40

Course Learning Outcomes:

On completion of this course, the students will be able to;

- Understand Water relation of plants with respect to various physiological processes.
- Explain chemical properties and deficiency symptoms in plants
- Classify aerobic and anaerobic respiration
- Explain the significance of Photosynthesis and respiration
- Assess dormancy and germination in plants
- To acquire adequate knowledge about translocation in plants, carbon dioxide concentrating mechanisms, growth regulators and flowering of plants.

Semester – VI

Course name: Cytogenetics

Course Code: BSCPBOTC601

Course Type: Core	Course Details: CC-6		L-T-P: 4-0-4		
Credit: 6	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		30	10	20	40

Course Learning Outcomes:

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

- Have conceptual understanding of laws of inheritance, genetic basis of loci and alleles and their linkage.
- Comprehend the effect of chromosomal abnormalities in numerical as well as

structural changes leading to genetic disorders.

- Develop critical understanding of chemical basis of genes and their interactions at population and evolutionary levels.
- Analyze the effect of mutations on gene functions and dosage.
- Examine the structure, function and replication of DNA.

Course name: Plant Ecology and Phytogeography

Course Code: BSCPBOC602

Course Type: Core	Course Details: CC-6		L-T-P: 4-0-4		
Credit: 6	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		30	10	20	40

Course Learning Outcomes:

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

- Understand core concepts of biotic and abiotic
- Classify the soils on the basis of physical, chemical and biological components
- Analysis the phytogeography or phytogeographical division of India
- Evaluate energy sources of ecological system
- Assess the adaptation of plants in relation to light, temperature, water, wind and fire.
- Conduct experiments using skills appropriate to subdivisions

SEC- Skill Enhancement Course – For Program/Pass Course

Semester - III

Course code – BSCPBOCSEC301

Course name: Ethnobotany

Course Type: SEC	Course Details: SEC-301		L-T-P: 4-0-0		
Credit: 4	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		-	10	-	40

Course Learning Outcomes:

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

- Conceptualize ethnobotany as an interdisciplinary science
- Restate the established methodology of ethnobotany studies
- Categories various indigenous ethnic groups and their environmental practices.
- Understand the legalities associated with ethnobotany.

Course Code BSCPBTSEC302

Course name – Nursery and Gardening

Course Type: SEC	Course Details: SEC-302		L-T-P: 4-0-0		
Credit: 4	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		-	10	-	40

Course Learning Outcomes:

On completion of this course the students will be able to;

- Understand the process of sowing seeds in nursery
- List the various resources required for the development of nursery
- Distinguish among the different forms of sowing and growing plants
- Analyse the process of Vegetative propagation
- Appreciate the diversity of plants and selection of gardening
- Examine the cultivation of different vegetables and growth of plants in nursery and Gardening

Semester - IV

Course code – BSCHBOTSEC401

Course name: Biofertilizers

Course Type: SEC	Course Details: SEC-401		L-T-P: 4-0-0		
Credit: 4	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		-	10	-	40

Course Learning Outcomes:

On the completion of this course, the students will be able to;

- Develop their understanding on the concept of bio-fertilizer
- Identify the different forms of biofertilizers and their uses
- Compose the Green manuring and organic fertilizers
- Develop the integrated management for better crop production by using both nitrogenous and phosphate bio fertilizers and vesicular arbuscular mycorrhizal (VAM).
- Interpret and explain the components, patterns, and processes of bacteria for growth in crop production

Course code – BSCHBOTSEC402

Course name – Biostatistics

Course Type: SEC	Course Details: SEC-402		L-T-P: 4-0-0		
Credit: 4	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		-	10	-	40

Course Learning Outcomes:

At the end of the course the students will be able to,

- Comprehend the fundamental concepts related to descriptive and inferential biostatistics.
- Develop skills in data tabulation, its treatment, analysis, interpretation and graphical representation of data.
- Analyze the implications of inferential statistics in biology.
- Develop their competence in hypothesis testing and interpretation.

Semester - V

Course code – BSCHBOTSEC501

Course name: Plant Diversity and Human welfare

Course Type: SEC	Course Details: SEC-501		L-T-P: 4-0-0		
Credit: 4	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		-	10	-	40

Course Learning Outcomes:

After the completion of this course, the learner will be able to:

- Develop understanding of the concept and scope of plant biodiversity
- Identify the causes and implications of loss of biodiversity
- Apply skills to manage plant biodiversity
- Utilize various strategies for the conservation of biodiversity
- Conceptualize the role of plants in human welfare with special reference to India

Course code – BSCHBOTSEC502

Course name: Mushroom culture technology

Course Type: SEC	Course Details: SEC-502		L-T-P: 4-0-0		
Credit: 4	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		-	10	-	40

Course Learning Outcomes:

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

- Recall various types and categories of mushrooms.
- Demonstrate various types of mushroom cultivating technologies.
- Examine various types of food technologies associated with mushroom industry.
- Value the economic factors associated with mushroom cultivation
- Device new methods and strategies to contribute to mushroom production.

Semester – VI

Course Code - BSCPBOTSEC601

Course Name: Floriculture

Course Type: SEC	Course Details: SEC-601		L-T-P: 4-0-0		
Credit: 4	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		-	10	-	40

Course Learning Outcomes:

After completing this course the learner will be able to;

- Develop conceptual understanding of gardening from historical perspective
- Analyze various nursery management practices with routine garden operations.
- Distinguish among the various Ornamental Plants and their cultivation
- Evaluate garden designs of different countries
- Appraise the landscaping of public and commercial places for floriculture.
- Diagnoses the various diseases and uses of pests for ornamental plants.

Course Code - BSCPBOTSEC602

Course Name: Fermentation Technology

Course Type: SEC	Course Details: SEC-602		L-T-P: 4-0-0		
Credit: 4	Full Marks: 100	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		-	10	-	40

Course Learning Outcomes:

After completing this course the learner will be able to;

- Employ the process for maintenance and preservation of microorganisms
- Analyze the various aspects of the fermentation technology and apply for Fermentative production
- Demonstrate proficiency in the experimental techniques for microbial production of enzymes: amylase and protease, bio product recover