

## DEPARTMENT OF BOTANY

### B.Sc. Courses Offered

2017 – 2020

Sem ester	Course	Subject code	Paper	Hours/ week	Credit
<b>I</b>	<b>Part I</b>	TL1711/FL 1711	Language: Tamil / French	6	3
	<b>Part II</b>	GE1711 / GE1712	General English (A Stream / B Stream)	6	3
	<b>Part III</b>	BC1711	Major Core I – Algae, Fungi and Lichens	4	4
		BC17P1	Major Practical I - Algae, Fungi and Lichens	2	-
		BA1711	Allied I –Theory: Cell Biology and Plant Anatomy	4	4
		BA17P1	Allied I – Practical - Cell Biology and Plant Anatomy	2	-
	<b>Part IV</b>	AEC171	Ability Enhancement Compulsory Course (AECC): English Communication	2	2
		BNM171	Non Major Elective Course (NMEC) – Food and Nutrition	4	2
		VEC172	Foundation Course I – Values for Life	-	-
	<b>Part V</b>	SDP172	Skill Development Programme (SDP) – Certificate Course	-	-
STP174		Student Training Programme (STP) - Clubs & Committees/NSS	-	-	
<b>II</b>	<b>Part I</b>	TL1721/FL 1721	Language: Tamil / French	6	3
	<b>Part II</b>	GE1721/ GE1722	General English (A Stream / B Stream)	6	3
	<b>Part III</b>	BC1721	Major Core II – Plant Anatomy and Embryology	4	4
		BC17P1	Major Practical I - Algae, Fungi and Lichens	-	2
		BC17P2	Major Practical II - Plant Anatomy & Embryology	2	2
		BA1721	Allied I – Theory: Taxonomy of Angiosperms and Plant Physiology	4	4
		BA17P1	Allied I – Practical - Cell Biology, Plant Anatomy, Taxonomy of Angiosperms and Plant Physiology	2	2
	<b>Part IV</b>	AEC172	Ability Enhancement Compulsory Course (AECC): Environmental Studies	2	2
		BNM172	Non Major Elective Course (NMEC)–	4	2

			Eco friendly Technology		
		VEC172	Foundation Course – II –Personality Development	-	1
	<b>Part V</b>	SDP172	Skill Development Programme (SDP) – Certificate Course	-	1
		STP174	Student Training Programme (STP) - Clubs & Committees/NSS	-	-
<b>III</b>	<b>Part I</b>	TL1731/FL 1731	Language: Tamil / French	6	3
	<b>Part II</b>	GE1731 / GE1732	General English (A Stream / B Stream)	6	3
	<b>Part III</b>	BC1731	Major Core III – Archegoniate	4	4
		BC1732	Major – Elective I	4	4
		BC1733	(a) Herbal Botany		
		BC1734	(b) Nursery and Gardening		
		BC1734	(c) Agricultural Botany		
		BC17P3	Major Practical III - Archegoniate	2	-
		BA1731	Allied II – Theory: Taxonomy of Angiosperms and Plant Physiology	4	4
		BA17P2	Allied II – Practical - Taxonomy of Angiosperms and Plant Physiology	2	-
	<b>Part IV</b>	SBC173/ SBC174	Skill Based Course (SBC) – Yoga / Computer Literacy	2	2
		VEC174	Foundation Course II – Personality Development	-	-
	<b>Part V</b>	STP174	Student Training Programme (STP): Clubs & Committees/NSS	-	-
	SLP173	Service Learning Programme (SLP): Extension Activity (RUN)	-	1	
<b>IV</b>	<b>Part I</b>	TL1741/FL 1741	Language : Tamil / French	6	3
	<b>Part II</b>	GE1741/ GE1742	General English (A Stream / B Stream)	6	3
	<b>Part III</b>	BC1741	Major Core IV – Plant Ecology and Phytogeography	4	4
		BC1742	Major – Elective II		
		BC1743	(a) Biological Resources	4	4
		BC1744	(b) Food Science		
		BC1744	(c) Biodiversity and Human Welfare		
		BC17P3	Major Practical III - Archegoniate	-	2
		BC17P4	Major Practical IV - Plant Ecology and Phytogeography	2	2
		BA1741	Allied II – Theory: Cell Biology and Plant Anatomy	4	4
		BA17P2	Allied II – Practical: Taxonomy, Anatomy, Plant Physiology, Cell Biology and Plant Anatomy	2	2
<b>Part IV</b>	SBC173/ SBC174	Skill Based Course (SBC) – Yoga / Computer Education	2	2	
	VEC174	Foundation Course II – Personality	-	1	

			Development			
	<b>Part V</b>	STP174	Student Training Programme (STP) - Clubs & Committees/NSS	-	1	
<b>V</b>	<b>Part III</b>	BC1751	Major Core V - Taxonomy and Economic Botany	6	5	
		BC1752	Major Core VI - Biochemistry and Biophysics	6	5	
		BC1753	Major Core VII - Microbiology and Plant Pathology	5	4	
		BC1754 BC1755 BC1756	Major – Elective III (a) Horticulture and Plant Breeding (b) Forestry (c) Biological Techniques	5	5	
		BC17P5	Major Practical V - Taxonomy and Economic Botany & Biochemistry and Biophysics	4	-	
		BC17P6	Major Practical VI - Microbiology and Plant Pathology	2	-	
	<b>Part IV</b>	BSK175	Skill Based Course (*SBC) – Floriculture	2	2	
		HRE175	Foundation Course III - Human Rights Education (HRE)	-	1	
	<b>VI</b>	<b>Part III</b>	BC1761	Major Core VIII - Genetics, Biostatistics and Bioinformatics	6	5
			BC1762	Major Core IX - Biotechnology and Molecular biology	6	5
BC1763			Major Core X - Plant Physiology and Metabolism	5	5	
BC1764 BC1765 BC1766			Major – Elective IV (a) Marine Botany (b) Organic Farming (c) Ecotourism	5	4	
BC17P5			Major Practical V – Taxonomy and Economic Botany & Biochemistry and Biophysics	-	2	
BC17P6			Major Practical VI - Genetics, Biostatistics and Bioinformatics & Biotechnology and Molecular biology	4	2	
BC17P7			Major Practical VII - Microbiology and Plant Pathology & Plant Physiology and Metabolism	2	2	
<b>Part IV</b>		BSK176	Skill Based Course (*SBC) – Project	2	2	
		WSC176	Foundation Course IV - Women's Studies (WS)	-	1	
				<b>TOTAL</b>	<b>180</b>	<b>140+3</b>

## B.Sc. Programme Outcome (POs)

PO No.	Upon completion of B.Sc. Degree Programme, the graduates will be able to :
PO - 1	Apply the acquired scientific knowledge to face day to day needs.
PO - 2	Create innovative ideas through laboratory experiments.
PO - 3	Carry out field works and projects independently and in collaboration with other institutions and industries
PO - 4	Reflect upon green initiatives and take responsible steps to build a sustainable environment.
PO - 5	Face challenging competitive examinations that offer rewarding careers in science and education.
PO - 6	Impart communicative skills and ethical values.
PO - 7	Equip students with hands on training through various courses to enhance entrepreneurship skills.

## B. Sc. Botany Programme Specific Outcomes (PSOs)

PSOs No.	Upon completion of B.Sc. Degree Programme, the graduates of Botany will be able to :	PO Addressed
PSO - 1	Develop a strong and competent knowledge in Botany	PO - 1
PSO - 2	Apply the contextual knowledge in Botany to improve the supply of medicines, food, fibers and other plant products to the society.	PO - 7
PSO - 3	Understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations	PO - 2
PSO - 4	Create green environment to protect nature for future sustenance	PO - 4
PSO - 5	Seek entrepreneurship through skill based, value added and related courses	PO - 7
PSO - 6	Communicate appropriately and effectively in science and also interact productively with people from diverse background	PO - 5
PSO - 7	Utilize the scientific explanation for the unity and diversity of life on earth	PO - 4
PSO - 8	Understand the professional, ethical, legal and social issues related to gender	PO - 6
PSO - 9	Integrate the related topics from other branches of science to carry out projects to have a successful career.	PO - 3

## Course Outcomes (COs)

**Semester** : I **Major Core I**  
**Name of the Course** : **Algae, Fungi and Lichens**  
**Subject code** : **BC1711**

CO	Upon completion of this course the students will be able to:	PSO addressed	CL
CO - 1	Identify the important contrast characters of Algae, Fungi and Lichens	PSO - 1	R
CO - 2	Describe ways in which lichens are beneficial to the environment	PSO - 4	U
CO - 3	Interpret the general characteristics of lichens	PSO - 1	Ap
CO - 4	Categorize the algal organisms according to Fritsch (1945)	PSO - 7	An
CO - 5	Correlate the study of life form, structure, reproduction and life cycle of different classes of Algae	PSO - 1	E
CO - 6	Recall the salient features of the different fungi	PSO - 1	U

**Semester** : I **Allied I**  
**Name of the Course** : **Cell Biology and Plant Anatomy**  
**Subject code** : **BA1711**

CO	Upon completion of this course the students will be able to:	PSO addressed	CL
CO - 1	Recognize the feature of plant anatomy : at the cell, tissue and organ level	PSO - 7	R
CO - 2	Differentiate Prokaryotes from Eukaryotes	PSO - 1	U
CO - 3	Know the complexity of xylem and phloem.	PSO - 1	U
CO - 4	Compare and contrast the organization of mitotic and meiotic cell division in plant and to learn about cell cycle	PSO - 3	E
CO - 5	Compare the structure and functions of living and non - living inclusions in plants	PSO - 3	E
CO - 6	Understand about the difference between the primary and secondary structures of plant.	PSO - 7	U

**Semester** **I**  
**NMEC**  
**Name of the Course** **: Food and Nutrition**  
**Subject code** **: BNM171**

<b>CO</b>	<b>Upon completion of this course the students will be able to :</b>	<b>PSO addressed</b>	<b>CL</b>
CO - 1	Understand the natural sources and nutritive value of food	PSO - 2	U
CO - 2	Discuss the role of balanced diet	PSO - 2	U
CO - 3	Know the pathogenic organisms which occur very often in food and dishes	PSO - 4	An
CO - 4	Recall the methods of food preservation	PSO - 9	R
CO - 5	Test for detection of food adulteration	PSO - 3	E
CO - 6	Collaborate with food industries and FAO of government to develop healthy food products from indigenous food ingredients	PSO - 9	C

**Semester** **: II** **Major Core - II**  
**Name of the Course** **: Plant Anatomy**  
**Subject code** **: BC1721**

<b>CO</b>	<b>Upon completion of this course the students will be able to:</b>	<b>PSO addressed</b>	<b>CL</b>
CO - 1	Recall the structure and functions of meristem, stomata, simple and complex tissues	PSO - 2	R
CO - 2	Differentiate between primary and secondary structures	PSO - 1	U
CO - 3	Understand the epidermal cells and its modification	PSO - 7	U
CO - 4	Interpret the different types of endosperm	PSO - 6	U
CO - 5	Examine the nodal anatomy types	PSO - 3	An
CO - 6	Compare the development of male and female gametophyte	PSO - 7	Ev

**Semester** : II **Allied - II**  
**Name of the Course** : Taxonomy of angiosperms and plant physiology  
**Subject code** : BA1721

CO	Upon completion of this course the students will be able to:	PSO addressed	CL
CO - 1	Recall the main features of angiosperms	PSO – 1	R
CO - 2	Understand the respiratory processes carried out by plants	PSO – 7	U
CO - 3	Apply their physical and biochemical knowledge to evaluate the processes involved in photosynthesis	PSO – 9	Ap
CO - 4	Analyze the various processes involving in water uptake and transport in plants.	PSO - 7	An
CO - 5	Classify the different plants by the natural, artificial and phylogenetic classification	PSO - 1	An
CO - 6	Interpret the role of growth hormones in plants	PSO - 2	Cr

**Semester** : II **NMEC**  
**Name of the Course** : Eco-Friendly Technology  
**Subject code** : BNM172

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO - 1	Know the nutritive value of mushroom and learnt the techniques of mushroom cultivation	PSO - 2	U
CO - 2	Design novel mechanisms for the sustainable utilization of natural resources	PSO - 4	Ap
CO - 3	Understand the role of microbes in fermentation	PSO - 9	An
CO - 4	Transform waste plant products into biofuels	PSO - 5	C
CO - 5	Make valuable craft articles utilizing the fibers of banana, <i>Cyperus</i> and palm	PSO - 5	C
CO - 6	Become an entrepreneur	PSO - 5	Ap

**Semester** : I **Major Practical - I**  
**Name of the Course** : **Algae, Fungi and Lichens**  
**Subject code** : **BC17P1**

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO - 1	Prepare of plant material for microscopic observation	PSO - 3	Cr
CO - 2	Draw appropriate anatomical diagrams from the sectioned plant material using microscope	PSO - 3	An
CO - 3	Identify different microalgae from water bodies	PSO - 7	U
CO - 4	Identify the microscopic structures of Algae, Fungi and Lichens	PSO - 7	U
CO - 5	Differentiate antheridium and oogonium of the algae studied	PSO - 1	An
CO - 6	Record the locally available algae	PSO - 5	U

**Semester** : II **Major Practical - II**  
**Name of the Course** : **Plant Anatomy and Embryology**  
**Subject code** : **BC17P2**

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO - 1	Observe and identify different types of tissues and stomata	PSO - 3	U
CO - 2	Prepare plant material for microscopic observation	PSO - 9	C
CO - 3	Draw appropriate anatomical diagrams from the sectioned plant material using microscope	PSO - 3	An
CO - 4	Differentiate and draw diagrams of nodes	PSO - 7	An
CO - 5	Observe and identify the slides of different stages of microsporogenesis	PSO - 3	U
CO - 6	Dissect and display the different stages of <i>Tridax</i> embryo	PSO - 3	E

**Semester** : I & II **Allied Practical - I**  
**Name of the Course** : **Cell Biology and Plant Anatomy; Taxonomy of Angiosperms and Plant Physiology**  
**Subject code** : **BA17P1**

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO - 1	Identify the electron micrographs of the cell organelles, non living inclusions and tissues	PSO - 1	U
CO - 2	Preparation of plant material for microscopic observation	PSO - 9	C



<b>CO - 3</b>	Draw appropriate anatomical diagrams from the sectioned plant material using microscope	PSO - 3	An
<b>CO - 4</b>	Dissect and display the floral parts of the families studied and draw floral parts and write floral formula	PSO - 7	An
<b>CO - 5</b>	Assign the plant provided to the respective families	PSO - 7	E
<b>CO - 6</b>	Demonstrate plant physiology experiments	PSO - 3	Ap

**Semester : III Major Core II**

**Name of the Course : Archegoniate**

**Subject code : BC1731**

<b>CO</b>	<b>Upon completion of this course the students will be able to :</b>	<b>PSO addressed</b>	<b>CL</b>
CO - 1	Describe the general characters of early land plants	PSO - 1	U
CO - 2	Interpret the ecological and economic importance of archegoniate	PSO - 4	Ap
CO - 3	Describe the external, internal and reproduction of archegoniate	PSO - 7	U
CO - 4	Differentiate life cycle patterns of archegoniate	PSO - 1	An
CO - 5	Classify Cryptogams and comment on the stelar evolution in pteridophytes	PSO - 1	U
CO - 6	Compare the fossil members of pteridophytes and gymnosperms	PSO - 1	An

**Semester : III Major Elective – I (a)**

**Name of the Course : Herbal Botany**

**Subject code : BC1732**

<b>CO</b>	<b>Upon completion of this course the students will be able to :</b>	<b>PSO addressed</b>	<b>CL</b>
CO - 1	Develop skills to grow herbs and empower entrepreneurship	PSO - 5	C
CO - 2	Compare the side effects of allopathic medicine with native medicine	PSO - 3	An
CO - 3	Compare the different types of indigenous medicine	PSO - 2	An
CO - 4	Incorporate the novel values of herbs as food supplement	PSO - 5	Ap
CO - 5	Understand the chemical constituents of important medicinal herbs.	PSO - 4	U
CO - 6	Demonstrate the use of locally available medicinal plants	PSO - 7	U

**Semester** : III **Major Elective – I (b)**  
**Name of the Course** : Nursery and Gardening  
**Subject code** : BC1733

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO - 1	Incorporate lab to land programme by raising home garden and nurseries	PSO - 5	Ap
CO - 2	Evaluate seed dormancy	PSO - 4	E
CO - 3	Practice the different techniques in propagating horticultural plants	PSO - 5	Ap
CO - 4	Explain the needed fertilizers in soil management	PSO - 7	U
CO - 5	Understand the external factors necessary for plant growth	PSO - 3	U
CO - 6	Explain the cultivation of different vegetable	PSO - 5	U

**Semester** : III **Major Elective I(c)**  
**Name of the Course** : Agricultural Botany  
**Subject code** : BC1734

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO - 1	Understand form , function and process within the plant	PSO - 1	U
CO - 2	To analyse seed technology	PSO - 3	An
CO - 3	Understand the physiological process within the plants inorder to appreciate the diversity in plants and crops	PSO - 7	U
CO - 4	Choose crops for different environments	PSO - 5	E
CO - 5	Identify the factors affecting the crops	PSO - 1	R
CO - 6	Develop skills by cultivating cereals and pulse	PSO - 5	C

**Semester** : III **Allied - II**

**Name of the Course** : Taxonomy of Angiosperms and Plant Physiology  
**Subject code** : BA1731

CO	Upon completion of this course the students will be able to:	PSO addressed	CL
CO - 1	Recall the main features of angiosperms	PSO - 1	R
CO - 2	Understand the respiratory processes carried out by plants	PSO - 7	U
CO - 3	Apply their physical and biochemical knowledge to evaluate the processes involved in photosynthesis	PSO - 7	Ap
CO - 4	Analyze the various processes involving in water uptake and transport in plants.	PSO - 3	An
CO - 5	Classify the different plants by the natural, artificial and phylogenetic classification	PSO - 6	An
CO - 6	Interpret the role of growth hormones in plants	PSO - 1	Cr

**Semester : IV Major Core - IV**  
**Name of the Course : Plant Ecology and Phytogeography**  
**Subject code : BC1741**

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO - 1	Explicate the ecological interconnectedness between soil texture and water in plants	PSO - 7	U
CO - 2	Compare the relationships between the different ecological groups	PSO - 9	An
CO - 3	Develop an appreciation of nature through direct experience with local ecosystems.	PSO - 7	C
CO - 4	Learn techniques for gathering data in the field and presenting the scientific information in figures and tables.	PSO - 3	An
CO - 5	Create an awareness to safeguard endemic and native plants and for sustainable utilization of natural resources	PSO - 4	C
CO - 6	Become employable in relevant areas related to ecology	PSO - 5	Ap

**Semester : IV Major Elective - II (a)**  
**Name of the Course : Biological Resources**  
**Subject code : BC1742**

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO - 1	Realise the vast expansion of biomass systems, both for "green energy" and for other renewable resources	PSO - 4	U
CO - 2	Understand the nutritive value of Single Cell Protein and learnt the techniques of producing SCP from microorganisms	PSO - 2	U
CO - 3	Recognize the need to protect and conserve Mother Nature	PSO - 4	An
CO - 4	Find ways to have sustainable management of natural resources	PSO - 4	E
CO - 5	Gain awareness of career options in the biological sciences	PSO - 9	C

**Semester : IV Elective - II (b)**  
**Name of the Course : Food Science**  
**Subject code : BC1743**

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO - 1	List the different constituents of food, methods of cooking and preservation	PSO - 5	R
CO - 2	Demonstrate the side effects of food additives	PSO - 3	Ap
CO - 3	Prepare value - added products of milk and vegetables	PSO - 5	C
CO - 4	Explain the industrial production of beer, ethyl alcohol, vinegar and amylase	PSO - 5	U
CO - 5	Design balanced diet	PSO - 8	C
CO - 6	Test for detection of food adulterants and colourants	PSO - 3	E

**Semester : IV Elective– II (c)**  
**Name of the Course : Biodiversity and Human Welfare**  
**Subject code : BC1744**

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO - 1	Record the biodiversity taxa at different region	PSO - 4	R
CO - 2	Assemble with any biodiversity management organizations at national or international level	PSO - 7	C
CO - 3	Organize biodiversity awareness programmes	PSO - 7	C
CO - 4	Apply the knowledge on conservation in day to day life	PSO - 4	Ap
CO - 5	Assess the value of biodiversity through valid methodologies	PSO - 7	E
CO - 6	Categorize the hot spots of biodiversity in national level	PSO - 6	An

**Semester : IV Allied II**  
**Name of the Course : Cell Biology and Plant Anatomy**  
**Subject code : BA1741**

CO	Upon completion of this course the students will be able to:	PSO addressed	CL
CO - 1	Recognize the feature of plant anatomy: at the cell, tissue and organ level	PSO - 1	R
CO - 2	Differentiate Prokaryotes from Eukaryotes	PSO - 7	U
CO - 3	Know the complexity of xylem and phloem.	PSO - 1	U
CO - 4	Compare and contrast the organization of mitotic and meiotic cell division in plant and to learn about cell cycle	PSO - 3	E

CO - 5	Compare the structure and functions of living and non - living inclusions in plants	PSO - 3	E
CO - 6	To understand about the difference between the primary and secondary structures of plant.	PSO - 3	U

**Semester : III Major Practical - III**  
**Name of the Course : Archegoniate**  
**Subject code : BC17P3**

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO - 1	Identify thallophytes given in the prescribed syllabus using study guides	PSO - 1	R
CO - 2	Distinguish thallophytes from angiosperms	PSO - 7	U
CO - 3	Practice the preparation of plant material for microscopic observation	PSO - 5	Ap
CO - 4	Draw appropriate anatomical diagrams from the sectioning of plant material using microscope	PSO - 5	An
CO - 5	Assess the archegonial plants easily through field trip	PSO - 9	E
CO - 6	Identify the fossil slides	PSO - 3	R

**Semester : IV Major Practical Paper IV**  
**Name of the Course : Plant Ecology and Phytogeography**  
**Subject code : BC17P4**

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO - 1	Record the locally available Hydrophytes, Xerophytes and Halophytes	PSO - 1	R
CO - 2	Construct a quadrat for vegetative analysis.	PSO - 4	Cr
CO - 3	Demonstrate the measurement of soil permeability	PSO - 3	Ap
CO - 4	Practice the preparation of plant material for microscopic observation	PSO - 5	Ap
CO - 5	Distinguish the phytogeography models	PSO - 7	An
CO - 6	Develop practical skills to visit field for individual/group work	PSO - 9	An

**Semester : III & IV Allied Practical - II**  
**Name of the Course : Taxonomy of Angiosperms, Anatomy and Plant Physiology; Cell Biology and Plant Anatomy**  
**Subject code : BA17P2**

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
----	---	---------------	----

CO - 1	Dissect the floral parts of the prescribed families and explain with appropriate diagrams	PSO - 7	R
CO - 2	Identify electron micrographs of the cell organelles and tissues	PSO - 3	U
CO - 3	Draw the anatomical structures of plant parts	PSO - 3	An
CO - 4	Detect the tissues and stomatal types	PSO - 3	An
CO - 5	Set - up the experiments to show physiological process	PSO - 1	U
CO - 6	Examine the non living inclusions	PSO - 7	Ap

**Semester : V Major Core - V**

**Name of the Course : Taxonomy and Economic botany**

**Subject code : BC1751**

CO	Upon completion of this course the students will be able to:	PSO addressed	CL
CO - 1	Relate the modifications in plant parts	PSO - 7	U
CO - 2	Differentiate the artificial, natural and phylogenetic classification and learn about ICN rules	PSO - 1	An
CO - 3	Evaluate the taxonomists of India	PSO - 1	Ev
CO - 4	Recall the characters of some important families	PSO - 6	R
CO - 5	Understand the economic importance of plants and their use at various levels	PSO - 1	U
CO - 6	Construct digital herbarium and learn about Herbarium techniques	PSO - 5	C

**Semester : V Major Core VI**

**Name of the Course : Biochemistry and Biophysics**

**Subject code : BC1752**

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO - 1	Identify the levels of structure in proteins and describe its biological roles	PSO - 3	R
CO - 2	Understand the structure, properties and fundamentals of biomolecules	PSO - 3	U
CO - 3	Demonstrate thermodynamic principles in biological energy conversion	PSO - 4	Ap
CO - 4	Analyze enzyme activity	PSO - 9	An
CO - 5	Compare the structure of saturated fatty acids with unsaturated fatty acids	PSO - 9	E
CO - 6	Analyse the biological data and interpret data with the hypothesis	PSO - 3	An

**Semester : V Major Core - VII**

**Name of the Course : Microbiology and Plant Pathology**

**Subject code : BC1753**

<b>CO</b>	<b>Upon completion of this course the students will be able to :</b>	<b>PSO addressed</b>	<b>CL</b>
CO - 1	Be familiarize with basic information about microbiology and microbiologists	PSO - 1	U
CO - 2	Explore the role and relevance of viruses and bacteria in the field of microbiology	PSO - 4	Ap
CO - 3	Work safely, competently and effectively in the laboratory in a team.	PSO - 9	An
CO - 4	Undertake careers in microbiology through the hands –on - training techniques they learnt	PSO - 3	C
CO - 5	Recognize the signs and symptoms of diseases and the major issues that arise due to such infections	PSO - 7	U

**Semester : V Major - Elective - III (a)**

**Name of the Course : Horticulture and Plant Breeding**

**Subject code : BC1754**

<b>CO</b>	<b>Upon completion of this course the students will be able to :</b>	<b>PSO addressed</b>	<b>CL</b>
CO - 1	Understand the scope of horticulture	PSO - 1	U
CO - 2	Develop creative skills for establishment of an orchard	PSO - 5	C
CO - 3	Explain the propagation methods by seeds, cuttings, grafting, budding and layering	PSO - 5	U
CO - 4	Apply the knowledge of horticultural techniques to develop ornamental gardens	PSO - 5	Ap
CO - 5	Recall the special techniques in plant breeding	PSO - 3	R
CO - 6	Analyze the employability skills in the field of horticulture	PSO - 5	An

**Semester : V Elective - III (b)**

**Name of the Course : Forestry**

**Subject code : BC1755**

<b>CO</b>	<b>Upon completion of this course the students will be able to :</b>	<b>PSO addressed</b>	<b>CL</b>
CO - 1	List the different agroforestry technologies and identify ways to classify them into relevant groups	PSO - 4	R
CO - 2	Review the types and distribution of forest with reference to India	PSO - 4	U
CO - 3	Apply forest management principles and practice them	PSO - 4	Ap

	in land management		
CO - 4	Analyze recreational forestry including Botanical gardens, Zoos, National Parks and Sanctuaries in recreation/conservation of wildlife	PSO - 5	An
CO - 5	Recognize the valuable forest products and the methods of conservation	PSO - 4	U
CO - 6	Report the possible man - made calamities of the forest	PSO - 8	U

**Semester** : V **Elective - III(c)**  
**Name of the Course** : **Biological Techniques**  
**Subject code** : **BC1756**

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO - 1	Understand the basic units of measurement	PSO - 1	U
CO - 2	Determine the basic principles and applications of instrument used in biology	PSO - 6	U
CO - 3	Practice and employ in the field of biological techniques	PSO - 9	Ap
CO - 4	demonstrate use the techniques, skills, tools necessary for practice	PSO - 3	Ap
CO - 5	Discuss the structure and functions of biological techniques	PSO - 6	U
CO - 6	Operate the biological techniques properly, work safely, competently and effectively in the laboratory in a team	PSO - 9	Ap

**Semester** : V **Skill Based Course**  
**Name of the Course** : **Floriculture**  
**Subject code** : **BSK175**

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO - 1	Understand the importance of the features of garden	PSO - 4	R
CO - 2	Apply the acquired knowledge and practical skill in developing ornamental garden	PSO - 5	Ap
CO - 3	Understand the process of plant growth	PSO - 1	R
CO - 4	Recall the methods of harvesting, packing and marketing of cut flowers	PSO - 5	R
CO - 5	Create aesthetic arrangement of dry flower decoration	PSO - 5	C
CO - 6	Prepare the students for a job in plant nursery or commercial grower or floral whole sale	PSO - 5	C



**Semester** : VI **Major core VIII**  
**Name of the Course** : **Genetics, Biostatistics and Bioinformatics**  
**Subject code** : **BC1761**

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO - 1	Apply Mendelian principle and predict genetic inheritance patterns	PSO - 6	U
CO - 2	Analyze the scientific evidence for the origin of life	PSO - 7	Ap
CO - 3	Get an insight of chromosome abnormalities and related human syndromes	PSO - 3	U
CO - 4	Generate biological interpretations and conclusions from data of scientific research	PSO - 9	C
CO - 5	Develop skills to become employable as professionals in Biochemical Industries	PSO - 5	C

**Semester** : VI **Major Core - IX**  
**Name of the Course** : **Biotechnology and Molecular Biology**  
**Subject code** : **BC1762**

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO - 1	Acquaint with the fundamental principles of biotechnology	PSO - 1	U
CO - 2	Familiarize with the laboratory requirements for plant tissue culture	PSO - 3	Ap
CO - 3	<i>Understand</i> the impact of technology upon society and <i>utilizing</i> with social conscience	PSO - 8	U
CO - 4	Explain the mechanisms of genetic information	PSO - 8	An
CO - 5	Apply the skill of Biotechnological concepts, to solve problems related to Biotechnology	PSO - 2	Ap
CO - 6	Become employable in Biotech laboratories	PSO - 5	C

**Semester** : VI **Major Core - X**  
**Name of the Course** : **Plant Physiology and Metabolism**  
**Subject code** : **BC1763**

CO	Upon completion of this course the students will be able to:	PSO addressed	CL
CO - 1	Correlate Plant - water relations with special emphasis on osmosis, transpiration and water potential	PSO - 1	An

CO - 2	Know the interrelationships among plants and micro - organisms in nitrogen fixation	PSO - 4	U
CO - 3	Use simple laboratory skills in scientific measurements	PSO - 3	Ap
CO - 4	Assess how plants respond and adapt to the environment	PSO - 4	E
CO - 5	Relate complementary metabolic pathways such as photosynthesis and respiration in energy acquisition	PSO - 6	An
CO - 6	Understand the major effects and physiological mechanisms of growth regulators in plants	PSO - 7	U

**Semester : VI Elective –IV (a)**

**Name of the Course : Marine Botany**

**Subject code : BC1764**

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO - 1	Describe the relationship between organisms and environment	PSO - 4	U
CO - 2	Compare the threats and conservation of seaweeds and sea grasses	PSO - 4	An
CO - 3	Evaluate how natural events and human activities affect coastal habitats	PSO - 1	E
CO - 4	Create a broad knowledge about the economic importance marine biodiversity	PSO - 7	C
CO - 5	Recognize the marine pollution and conservation methods	PSO - 9	U
CO - 6	Describe the classification of marine habitat	PSO - 6	U

**Semester : VI Elective – IV (b)**

**Name of the Course : Organic Farming**

**Subject code : BC1765**

CO	Upon completion of this course the students will be able to:	PSO addressed	CL
CO - 1	Understand the legacy of organic farming	PSO - 8	U
CO - 2	Apply the knowledge on organic pest management	PSO - 1	Ap
CO - 3	Analyze different sources of organic manures	PSO - 3	An
CO - 4	Recall different types of farming and its benefits	PSO - 5	R
CO - 5	Evaluate the land for organic farming	PSO - 5	E
CO - 6	Create an awareness on organic farming and its certification	PSO - 2	C

**Semester : VI Major Elective IV (C)**

**Name of the Course : Ecotourism**

**Subject code : BC1766**

<b>CO</b>	<b>Upon completion of this course the students will be able to :</b>	<b>PSO addressed</b>	<b>CL</b>
CO - 1	Recognize that tourism has on naturally beautiful environments	PSO - 4	R
CO - 2	Explain that tourism does not exploit the natural environment or local communities.	PSO - 4	U
CO - 3	Create environmental and cultural awareness and respect	PSO - 7	C
CO - 4	Understand the type of tourism	PSO - 1	U
CO - 5	Apply the environment as well as cultural matters in eco tourism	PSO - 3	Ap
CO - 6	Evaluate research in tourism environment related areas	PSO - 4	E

**Semester : V Major Practical - V**

**Name of the Course : Taxonomy and Economic Botany; Biochemistry and Biophysics**

**Subject code : BC17P5**

<b>CO</b>	<b>Upon completion of this course the students will be able to :</b>	<b>PSO addressed</b>	<b>CL</b>
CO - 2	Identify the plant parts from commonly available plants	PSO - 1	R
CO - 3	Identify the family and describe the plant parts and floral parts	PSO - 6	U
CO - 4	Record the economically important products from the prescribed families in the syllabus	PSO - 2	Ap
CO - 5	Estimation, titration, separation and separation of biomolecules	PSO - 3	E
CO - 6	Identify spotters (i.e. Photos/Models/Instruments)	PSO - 6	Ap
CO - 6	Demonstrate the qualitative and quantitative analysis of Glucose, Starch, Protein and Lipids	PSO - 3	Ap

**Semester : VI Major Practical - VI**  
**Name of the Course : Genetics, Biostatistics and Bioinformatics & Biotechnology and Molecular Biology**  
**Subject code : BC17P6**

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO - 1	Identify the different stages of mitosis from the root tip squash of onion	PSO - 3	R
CO - 2	Demonstrate experiments and interpret experimental data using biostatistics	PSO - 3	U
CO - 3	Identify spotters (i.e. Photos/Models/Instruments)	PSO - 1	Ap
CO - 4	Solve genetic problems	PSO - 8	E
CO - 5	Understand the sterilization technique and preparation of MS medium	PSO - 5	Cr
CO - 6	Find out the biostatistics calculations from given data	PSO - 3	U

**Semester : V & VI Major Practical - VII**  
**Name of the Course : Microbiology and Plant Pathology & Plant Physiology and Metabolism**  
**Subject code : BC17P7**

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO - 1	Demonstrate and interpret the results to physiology experiments	PSO - 7	R
CO - 2	Identify the disease causing microbes	PSO - 1	U
CO - 3	Apply sterilization technique and prepare sterile bacterial culture media	PSO - 3	Ap
CO - 4	Detect Coliform bacteria in water samples	PSO - 3	An
CO - 5	Identify the spotters	PSO - 1	Ap
CO - 6	Arrange a visit to dairy form and know the importance of pasteurization	PSO - 3	Cr