

DEPARTMENT OF BOTANY
PROGRAMME SPECIFIC OUTCOMES

Discipline	Course type	Course title	Outcomes
SEM-1 (Hons)	CC1T	Algae & Microbiology	<ol style="list-style-type: none"> 1. To learn the types of virus and bacteria and their harmful and beneficial effect. 2. To learn how to prevent the bacterial and viral disease in society as well as immunization system by vaccine. 3. To learn the uses of algae along with their respective life form along with their consumption as food, fodder and medicine in human society.
	CC1P	Algae & Microbiology	<ol style="list-style-type: none"> 1. Students will able to identify various types of bacteria and algae of their habitat by staining technique with microscope. 2. Students will able to identify the various pathogens of plants and animals by handsome method.
	CC2T	Bio molecules and Cell Biology	<ol style="list-style-type: none"> 1. Students learn about the significance, classification and structure of carbohydrates, lipids, proteins and various types of nucleic acids present in life system 2. They develop the concept of free energy, role of energy currency molecule. 3. They learn about the structure, classification, features of enzyme and their role in cell. 4. Students can classify and distinguish the prokaryotic and eukaryotic cells and they learn about the origin of eukaryotic cell. 5. Students can gather the knowledge about the plant cell wall and plasma membrane. 6. Students can develop their knowledge about structure, function, signaling system of cell organelles.
			<ol style="list-style-type: none"> 1. Students differ reducing and non-reducing sugars, identify lipids and proteins by their experimental work. 2. They can easily identify the plant cell structure with the

SEM-1 (Hons)	CC2P	Biomolecules and Cell Biology	<p>help of epidermal peel mount of onion.</p> <p>3. They collect the knowledge of the phenomenon of protoplasmic streaming.</p> <p>4. With the help of practical work student can measure the cell size by the technique of micrometry.</p> <p>5. Students can develop the phenomenon of plasmolysis and deplasmolysis.</p> <p>6. They can develop the knowledge about membrane permeability experimentally with the use of organic solvent and temperature.</p>
	GE-1T	Biodiversity (Microbes,Algae,Fungi,Arche goniate)	<p>1. Students are known about the virus and how plants and animals are infected through virus.Explain in general two ways in which viruses recognize their hosts.</p> <p>2. Students are known about the difference between virus and bacteria and how the virus are transmitted in animal and plants under certain environmental conditions.</p> <p>3. Students are able to known microbes are every where and affect almost all aspects of our lives .We can not see them ,but our world would not function without them,Bacteria,Viruses,Fungi,Protists,algae and other microscopic life forms are on us and in us,in the air,soil,and water,and in our food.They are in and on the surfaces and other environments.</p> <p>4. Show evidence of self study by acquiring relevant knowledge about algae other than that presented by the lecturer.</p> <p>5. Students are able some fungi also edible and some fungi poisoinous because some harmful toxin produced from these fungi.</p>

SEM-1 (Hons)	GE-1P	Biodiversity (Microbes,Algae,Fungi,Arche goniate)	<ol style="list-style-type: none"> 1. Students are able to known practically how different plant species are distinguish microscopically and morphology. 2. How the different groups of bacteria identifying by using staining method under microscope
SEM-1 (General)	DSC-1A T	Biodiversity (Microbes,Algae,Fungi,Arche goniate)	<ol style="list-style-type: none"> 1. Students are known about the virus and how plants and animals are infected through virus.Explain in general two ways in which viruses recognize their hosts. 2. Students are known about the difference between virus and bacteria and how the virus are transmitted in animal and plants under certain environmental conditions. 3. Students are able to known microbes are every where and affect almost all aspects of our lives .We can not see them ,but our world would not function without them,Bacteria,Viruses,Fungi,Protists,algae and other microscopic life forms are on us and in us,in the air,soil,and water,and in our food.They are in and on the surfaces and other environments. 4. Show evidence of self study by acquiring relevant knowledge about algae other than that presented by the lecturer. 5. Students are able some fungi also edible and some fungi poisoinous because some harmful toxin produced from these fungi.
	DSC-1A P	Biodiversity (Microbes,Algae,Fungi,Arche goniate)	<ol style="list-style-type: none"> 1. Students are able to known practically how different plant species are distinguish microscopically and morphology. 2. How the different groups of bacteria identifying by using staining method under microscope

Sem-II (Hons)	CC3T	C1T (Algae & Microbiology) Mycology and Phytopathology	<p>1. To learn the types of virus and bacteria and their harmful types and their effects.</p> <p>2. To learn how to prevent the bacterial and parasitic diseases which cause many plant diseases hampering crop production system by vaccine.</p> <p>3. To learn the causes of plant and animal diseases by learning their respective life cycles of the disease forming pathogens.</p> <p>consumption as food, fodder and medicine in human society.</p>
	CC3P	Mycology and Phyto pathology	<p>1. Students will identify easily the various plant disease by observing the symptoms and will be benefited in agriculture.</p> <p>2. Students will be self development economically by mushroom culture which have been taught by the syllabus.</p>
	CC4T	Archegoniate	<p>1. Students can develop their knowledge about Archegoniate.</p> <p>2. Students will be able to identify various types of bacteria and algae of their habitat by staining technique with microscope.</p> <p>3. Students will be able to identify the various pathogens of plants and animals by handsome method.</p> <p>4. They earn the experience and knowledge about the various types of ecological and habitat features of this group and their ecology.</p> <p>5. Students learn about the significance, classification and structure of carbohydrates, lipids, proteins and various types of nucleic acids present in life system.</p>
	CC4P	Archegoniate	<p>1. Students are able to learn about the morphological and anatomical features of some species of bryophyte, pteridophyte and gymnosperm by their practical work.</p> <p>2. They learn about the structure, classification, features of enzyme and their role in cell.</p> <p>3. They can easily separate this group by developing their knowledge with the help of their practical work.</p> <p>4. Students can classify and distinguish the prokaryotic and eukaryotic cells and they learn about the origin of eukaryotic cell.</p>

Sem-II (Hons)	GE-2 T	Plant Ecology and Taxonomy	<p>5. Students are able to learn the classification, taxonomy and systematic approach of plant. They collect their knowledge about modern evidence of plant taxonomy, botanical nomenclature, function, signaling system of cell organelles.</p> <p>6. Students are develop their knowledge about herbarium preparation, conservation technique.</p>
	GE-2P	Plant Ecology and Taxonomy	<p>1. Students knowledge increase about the taxonomical and ecological characters of plant stem,root,leaves,flowers in practical classes.</p> <p>2. Students identify the various types of plants and increase their knowledge.</p> <p>3. It promotes group works,research and community involvement.</p>
Sem-II (General)	DSC-1B T	Plant Ecology and Taxonomy	<p>1. Students are able to learn the classification, taxonomy and systematic approach of plant. They collect their knowledge about modern evidence of plant taxonomy, botanical nomenclature.</p> <p>2. Students are develop their knowledge about herbarium preparation, conservation technique.</p> <p>3. They earn their knowledge and can easily different monocot and dicot family, their characteristic feature, economic importance and medicinal value of some plant.</p>

	DSC-1B P	Plant Ecology and Taxonomy	<ol style="list-style-type: none"> 1. Students knowledge increase about the taxonomical and ecological characters of plant stem,root,leaves,flowers in practical classes. 2. Students identify the various types of plants and increase their knowledge. 3. It promotes group works,research and community involvement.
Sem-III (Hons)	CC-5T	Morphology and anatomy	<ol style="list-style-type: none"> 1. Students are able to know how artificially Transgenic plants and transgenic animals are producing through application of Genetic Engineering. 2. Students are able to know how plants are protected from different pathogens.
	CC-5P	Morphology and anatomy	<ol style="list-style-type: none"> 1. Students knowledge increases about the morphological and anatomical characters of plant stem,root,leaves,flowers in practical classes, 2. Students identify the various types of plants by their anatomical and morphological features and increase their knowledge practically
	CC-6T	Economic Botany	<ol style="list-style-type: none"> 1.Learn about various economically important plants and their value for benefit of the society. 2.Learn about the parts of plants which bear the economical importance 3.Applying the knowledge on pharmaceutical industries for developing herbal medicines.
	CC-6P	Economic Botany	<ol style="list-style-type: none"> 1.Handsome work on different parts of economically valuable plants . 2.Acquiring practical knowledge on organoleptic,chemical and microscopic, studies of different herbal drugs.
	CC-7T	Genetics	<ol style="list-style-type: none"> 1. To learn inheritance pattern of different characters from generation to generation by which students can predict the outcomes of different crosses in plants as well as in animals. 2. How genes are involved in character modification of

			<p>biological organisms.</p> <p>3.The students will be able to learn about the basics of cell and its inclusions and understand the basic concepts of mendelian genetics and its variations</p>
	CC-7P	Genetics	<p>1.Acquiring practical knowledge on the variation of morphological characters in respect to genetic variation.</p> <p>2.Able to construct linkage and genetic map of genes.</p> <p>3. Applications as well as familiarize with the various concepts of evolution in respect to genetic variability.</p> <p>3. Students are often applying their ideas,working on various active principles of plants and collaborative projects or using approaches against various disorder of human beings.</p>
	SEC-1	Bio-fertilizer	<p>1.Students are able to learn about different types of bio fertilizers.</p> <p>2.Students are able to known how the green manure benefitted to plant development and eco friendly uses, because chemical fertilizers are harmful which causes cancer, skin diseases.</p>
	GE-3T	Plant anatomy and Embryology	<p>1.Student can learn about the anatomical characters of different plants along with respective identification.</p> <p>2.Learn about the various embryological processes of plant development practically.</p>
	GE-3P	Plant anatomy and Embryology	<p>1. Acquiring practical knowledge on anatomy of different plant parts.</p> <p>2. Practically learn about the influence of growth factors for embryogenesis of plant and their modification.</p>
Sem-III (General)	DSC-1C T	Plant anatomy and Embryology	<p>1.Student can learn about the anatomical characters of different plants along with respective identification.</p> <p>2.Learn about the various embryological processes of plant development</p> <p>3.Learn about the factors for embryogenesis of plant.</p>
	DSC-1C P	Plant anatomy and Embryology	<p>1. Acquiring practical knowledge on anatomy of different plant parts.</p>

			2. Practically learn about the influence of growth factors for embryogenesis of plant and their modification.
	SEC-1	Bio-fertilizer	1.Students are able to learn about different types of bio fertilizers. 2.Students are able to know how the green manure benefitted to plant development and eco friendly uses, because chemical fertilizers are harmful which causes cancer, skin diseases.
Sem-IV (Hons)	CC-8T	Molecular biology	1. Students will able to learn about the reasons and mechanism of mutation and its related genetic diseases. 2. Students can able to learn about the gene and its regulation and how far change the living system in society.
	CC-8P	Molecular biology	1. Develop practical knowledge on different blotting techniques. 2. Practically able to isolate genomic and plasmid DNA and estimation .
	CC-9 T	Plant ecology and phyto geography	1.Students are able to learn how can managed the biodiversity, conservation and control the pollution. 2.They can learn the distribution of different vegetation in different geographical regions 3.Learn about the different ecological factors responsible for vegetation differentiation.
	CC-9 P	Plant ecology and phyto-geography	1.The student experience will increase about various types of ecological plant species and their impact on environment. 2.develop knowledge about species density, dispersion in various ecological regions.
	CC-10 T	Plant systematics	1. Students are able to learn the classification, taxonomy and systematics approach of plant. They collect their knowledge about modern evidence of plant taxonomy, botanical nomenclature. 2. Students are develop their knowledge about herbarium preparation, conservation technique. 3. They earn their knowledge and can easily different

			monocot and dicot family, their characteristic feature, economic importance and medicinal value of some plant.
	CC-10 P	Plant systematics	<ol style="list-style-type: none"> 1. Students are able to develop the skill to draw floral formula, floral diagram and standard key and also increase their skill in morphology. 2. The Students will understand various Angiosperm plant habits. 3. Learn about vegetative and reproductive and structural features of Angiosperms.
	SEC-2	Mushroom culture technology	<ol style="list-style-type: none"> 1. Students also knowing about the technique of mushrooms production, which they can produce those things for marketing for earn money. 2. Learn about the diseases of mushroom and their management. 3. Students will be self dependent economically by mushroom cultivation.
	GE-4 T	Plant physiology and Metabolism	<ol style="list-style-type: none"> 1. Plant physiology is the most efficient part of students. Students enrich their knowledge about various physiological process and metabolism in life system and their regulation which manifested on the crop productivity. 2. Students will learn the plant growth regulators and their influences on plant metabolism.
	GE-4P	Plant physiology and Metabolism	<ol style="list-style-type: none"> 1. Practically learn about the various factors influencing physiological processes and metabolism in plants. 2. Learn how metabolic processes influence on productivity.
Sem-IV (General)	DSC-1D T	Plant physiology and Metabolism	<ol style="list-style-type: none"> 1. Plant physiology is the most efficient part of students. Students enrich their knowledge about various physiological process and metabolism in life system and their regulation which manifested on the crop productivity. 2. Students will learn the plant growth regulators and their influences on plant metabolism.

	DSC-1D P	Plant physiology and Metabolism	<p>1. Practically learn about the various factors influencing physiological processes and metabolism in plants.</p> <p>2. Learn how metabolic processes influence on productivity.</p>
	SEC-2T	Mushroom culture technology	<p>1. Students also knowing about the technique of mushrooms production, which they can produce those things for marketing for earn money.</p> <p>2. Learn about the diseases of mushroom and their management.</p> <p>3. Students will be self dependent economically by mushroom cultivation.</p>
Sem-V (Hons)	CC-11 T	Reproductive Biology of Angiosperms	<p>1. Learn about the various reproductive organs and their development in plants along with their modifications.</p> <p>2. Learn about the life cycles of plants and its modification in respect to changing the reproductive processes.</p>
	CC-11P	Reproductive Biology of Angiosperms	<p>1. Microscopic studies on various reproductive organs of plants and applying these on plant identification.</p> <p>2. Practical knowledge on changing the reproductive time span in the aid of increasing production .</p>
	CC-12T	Plant Physiology	<p>1. Plant physiology is the most efficient part of students. Students enrich their knowledge about various physiological process in life system and their regulation which manifested on the crop productivity.</p> <p>2. Students will learn the plant growth regulators and their influences on plant.</p>
	CC-12P	Plant Physiology	<p>1. Practically learn about the various factors influencing physiological processes in plants.</p> <p>2. Learn how physiological system of plants influence on productivity.</p>
	DSE-1 T	Biostatistics	<p>1. Students will able to learn various statistical approaches to evaluate and to measure the productivity, number of plants in respect to various life supporting parameters.</p> <p>2. Knowledges about the various methods of data representations and validation.</p>

	DSE-1 P	Biostatistics	<p>1. Practical approaches on testing the fitness of various biological rules in respect to observed data.</p> <p>2. Handsome practice of data tabulation and measuring validity of phenotypic variation in respect to genetic variation.</p>
	DSE-2T	Plant Breeding	<p>1. Students will be able to learn how different types of hybrids are produced.</p> <p>2. Learn about the different new crop varieties and their utility in human society.</p> <p>3. How hybrids crops minimize the scarcity of food in the world.</p> <p>4. Students will be able to produce various types of hybrid plants and genetically modified plants by learning the syllabus which helps to absorb them in various commercial companies.</p>
	DSE-2P	Plant Breeding	<p>1. Handsome practices on development of new crop varieties.</p> <p>2. Practical knowledge on various hybridization processes and propagation processes.</p>
Sem-V (General)	DSE-1A T	Cell and molecular Biology	<p>1. Students will be able to learn about the reasons and mechanism of mutation and its related genetic diseases at the molecular level.</p> <p>2. Students can be able to learn about the gene and its regulation and how far it changes the living system in society.</p> <p>3. Learn about the various types of cells and different underlying mechanisms in cells.</p>
	DSE-1A P	Cell and molecular Biology	<p>1. Develop practical knowledge on different techniques for cell isolation and identification and reflecting the status of cells</p> <p>2. Practically able to isolate genomic and plasmid DNA and estimation.</p>
	SEC-3 T	Ethnobotany	<p>1. Learn about the plants used by tribal people for curing different diseases and food, etc.</p> <p>2. Learn about the active constituents of such herbal medicines used by ethnic people along with their distribution.</p>
Sem-VI (Hons)	CC-13 T	Plant Metabolism	<p>1. Learn about various metabolic processes in plants</p> <p>2. Learn about the influences of metabolism in crop</p>

			productivity and disease resistance.
Sem-VI (Hons)	CC-13 P	Plant Metabolism	1.Acquiring practical knowledge on various metabolic processes and their influence on phenotypic as well as physiological differentiation. 2.Creat ability to evaluate the rates of metabolism in respect to different factors.
	CC-14 T	Plant Biotechnology	1.Learn about the process of tissue culture along with clone development 2.Learn about the various GM (Genetically modified)crops and their production. 3.Learn the application of biotechnology for welfare of human society in medical,environmental and industrial aspects.
	CC-14 P	Plant Biotechnology	1.Student will learn various techniques of tissue culture in plants for economic and environmental aspect. 2.Practically able to develop GM plants and various medically important commodities like vaccine, insulin etc. 3.Make students for fitting to get job in various industries.
	DSE-3 T	Industrial and Environmental Microbiology	1.Learn about the names and role of different microbes used in food and pharmaceutical industries. 2.Knowledge about the modification of microbial colonization and its influence on economically important commodities .
	DSE-3 P	Industrial and Environmental Microbiology	1.Handsome practices on microbial inoculation and culture . 2.Able practically to develop various economically and pharmaceutically important products .
	DSE-4T	Analytical Technique in Plant Sciences	1.Learn about the principle of different microscopy. 2.Learn about the differential and density gradient centrifugation. 3.Learn about the statistical data analysis.
	DSE-4P	Analytical Technique in Plant Sciences	1.Learn about the separation of DNA, RNA and Protein. 2. Learn about DNA sequencing,. 3. Learn about ELISA test.

Sem-VI (General)	DSE-1B T	Genetics and Plant breeding	<p>1.Students will able to learn how different types ofhybrids are produced.</p> <p>2.Learn about the different new crop varities and their utility in human society.</p> <p>3.How hybrids crops minimizes the scarcity of food in world.</p> <p>4.Students will able to produce various types of hybrids plants and genetically modified plants by learning the syllabus which help to absorb them in various commercial companies.</p>
	DSE-1B P	Genetics and Plant breeding	<p>1.Handsome practices on development of new crop varities.</p> <p>2.Practical knowledge on various hybridization processes and propagation processes.</p>
	SEC-4 T	Medicinal Botany	<p>1. Students can develop their knowledge about economic plant, medicinal plants, oil yielding plants, some vegetables and pharmacological concept of our daily life.</p> <p>2. They also can develop their knowledge about cultivation, propagation and harvesting of different medicinal plants.</p>