

Department of Botany									
1.1.1 Curricula developed and implemented have relevance to the local/ national / regional and global developmental needs which are reflected in Programme Outcomes (PSOs) and Course Outcomes (COs) of various programmes offered by the Institution									
S. No.	Course Code	Name of the Course	L	N	R	G	POs, PSOs, COs Addressed		
							POs	PSOs	COs
2023-2024									
1	BU23ICCI	Core Course I : Plant Diversity - I Algae	☑	☑	☑	☑	PO 1 - To obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence..	PSO 1 - To implement the concept of science and technology to foster the traditional and modern techniques for solving the complex problems in Plant Biology. PSO 7 - To apply appropriate techniques, resources, and modern ICT tools for understanding plant resources.	CO 1 - To relate to the structural organization, reproduction and significance of algae. CO 2 - To compare and contrast the thallus organization and modes of reproduction in algae. CO 3 - To explain the benefits of various algal technologies on the ecosystem. CO 4 - To compare and contrast the thallus organization and modes of reproduction in algae. CO 5 - To determine the emerging areas of Algal Biotechnology for identifying commercial potentials of algal products and their uses.
2	BU23ICPI	Core Lab Course I : Plant Diversity - I Algae	☑	☑	☑	☑	PO 1 - To obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science. PO 3 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To implement the concept of science and technology to foster the traditional and modern techniques for solving the complex problems in Plant Biology. PSO 3 - To develop the scientific problem solving skills during experimentation, research projects, analysis and interpretation of data.	CO 1 - To recall and identify algae using key identification characters. CO 2 - To demonstrate practical skills in preparation of fresh mount and identification of algal forms from algal mixture. CO 3 - To develop critical understanding on morphology, anatomy and reproduction of Bryophytes, Pteridophytes and Gymnosperms. CO 4 - To decipher the algal diversity in fresh/marine water and their economic significance. CO 5 - To evaluate the various techniques used to culture algae for commercial purposes.
3	BU23IECI	Elective Course I : Allied Botany I	☑	☑	☑	☑	PO 1 - To obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science. PO 7 - To participate in learning activities throughout life, through self-paced and self-directed learning to improve.	PSO 1 - To implement the concept of science and technology to foster the traditional and modern techniques for solving the complex problems in Plant Biology. PSO 8 - To demonstrate the contextual knowledge in sustainable exploitation of medicinal, economically important and endangered plants as per the National Biodiversity Act.	CO 1 - To increase the awareness and appreciation of human friendly algae and their economic importance. CO 2 - To develop an understanding of microbes and fungi and appreciate their adaptive strategies. CO 3 - To develop critical understanding on morphology, anatomy and reproduction of Bryophytes, Pteridophytes and Gymnosperms. CO 4 - To compare the structure and function of cells and explain the development of cells. CO 5 - To understand the core concepts and fundamentals of plant biotechnology and genetic engineering.
4	BU23IEPI	Elective Lab Course I : Allied Botany Practical	☑			☑	PO 1 - To obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To implement the concept of science and technology to foster the traditional and modern techniques for solving the complex problems in Plant Biology. PSO 2 - To ensure the use of contemporary tools and techniques in understanding the scope and significance of Botany. PSO 3 - To develop the scientific problem solving skills during experimentation, research projects, analysis and interpretation of data.	CO 1 - To study the internal organization of algae and fungi. CO 2 - To develop critical understanding on morphology, anatomy and reproduction of bryophytes, Pteridophytes and gymnosperms. CO 3 - To study the classical taxonomy with reference to different parameters. CO 4 - To understand the fundamental concepts of plant anatomy and embryology. CO 5 - To study the effect of various physical factors on photosynthesis.
5	BU23INMI	Non-Major Elective NME : Nursery and Landscaping	☑	☑	☑	☑	PO 1 - To obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science. PO 3 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To implement the concept of science and technology to foster the traditional and modern techniques for solving the complex problems in Plant Biology. PSO 5 - To enhance capacity to think critically; ability to design and execute experiments independently and/or team under multidisciplinary settings.	CO 1 - To recognize the basic principles and components of gardening. CO 2 - To explain about bio-aesthetic planning and conceptualize flower arrangement. CO 3 - To apply techniques for design various types of gardens according to the culture and art of bonsai. CO 4 - To compare and contrast different garden styles and landscaping patterns. CO 5 - To establish and maintain special types of gardens for outdoor and indoor landscaping.
6	BU23IFCI	Foundation Course: Basics of Botany	☑	☑	☑	☑	PO 1 - To obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science. PO 4 - To enhance leadership qualities, team spirit and communication skills to face challenging competitive examinations for a better developmental carrier.	PSO 1 - To implement the concept of science and technology to foster the traditional and modern techniques for solving the complex problems in Plant Biology. PSO 2 - To ensure the use of contemporary tools and techniques in understanding the scope and significance of Botany. PSO 3 - To develop the scientific problem solving skills during experimentation, research projects, analysis and interpretation of data.	CO 1 - To increase the awareness and appreciation of human friendly algae and their economic importance. CO 2 - To develop an understanding of microbes and fungi and appreciate their adaptive strategies. CO 3 - To develop critical understanding on morphology, anatomy and reproduction of Bryophytes, Pteridophytes and Gymnosperms. CO 4 - To compare the structure and function of cells and explain the development of cells. CO 5 - To understand the core concepts and fundamentals of plant biotechnology and genetic engineering.
7	BU23CCCI	Core Course II : Plant Diversity II- Fungi, Bacteria, Viruses, Plant Pathology and Lichens	☑	☑	☑	☑	PO 1 - To obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science. PO 4 - To enhance leadership qualities, team spirit and communication skills to face challenging competitive examinations for a better developmental carrier.	PSO 1 - To implement the concept of science and technology to foster the traditional and modern techniques for solving the complex problems in Plant Biology. PSO 2 - To ensure the use of contemporary tools and techniques in understanding the scope and significance of Botany.	CO 1 - To recognize the general characteristics of microbes, fungi and lichens and disease symptoms. CO 2 - To develop an understanding of microbes, fungi and lichens and appreciate their adaptive strategies based on ructural nization. CO 3 - To identify the common plant diseases, according to geographical locations and device control measures. CO 4 - To analyze the emerging trends in fungal biotechnology with special reference to agricultural and pharmaceutical applications. CO 5 - To determine the economic importance of microbes, fungi and lichens.

8	BU232CP1	Core Lab Course II : Plant Diversity II- Fungi, Bacteria, Viruses, Plant Pathology and Lichens – Practical -II	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science. PO 3 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To implement the concept of science and technology to foster the traditional and modern techniques for solving the complex problems in Plant Biology. PSO 2 - To ensure the use of contemporary tools and techniques in understanding the scope and significance of Botany.	CO 1 - To identify microbes, fungi and lichens using key identifying characters. CO 2 - To develop practical skills for culturing and cultivation of fungi. CO 3 - To identify and select suitable control measures for the common plant diseases. CO 4 - To analyze the characteristics of microbes, fungi and plant pathogens. CO 5 - To access the useful role of fungi in agriculture and pharmaceutical industry.
9	BU232EC1	Elective Course II : Allied Botany -II		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence. PO 3 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To implement the concept of science and technology to foster the traditional and modern techniques for solving the complex problems in Plant Biology. PSO 2 - To ensure the use of contemporary tools and techniques in understanding the scope and significance of Botany.	CO 1 - To understand the fundamental concepts of plant anatomy and embryology. CO 2 - To analyze and recognize the different organs of plants and secondary growth. CO 3 - To understand water relation of plants with respect to various physiological processes. CO 4 - To know about the fundamental concepts of aerobic and anaerobic respiration. CO 5 - To classify plant systematics and recognize the importance of herbarium and virtual herbarium.
10	BU232EP1	Elective Lab Course II : Allied Botany Practical		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science. PO 4 - To enhance leadership qualities, team spirit and communication skills to face challenging competitive examinations for a better developmental carrier.	PSO 1 - To implement the concept of science and technology to foster the traditional and modern techniques for solving the complex problems in Plant Biology. PSO 3 - To develop the scientific problem solving skills during experimentation, research projects, analysis and interpretation of data.	CO 1 - To study the internal organization of algae and fungi. CO 2 - To develop critical understanding on morphology, anatomy and reproduction of bryophytes, pteridophytes and gymnosperms. CO 3 - To study the classical taxonomy with reference to different parameters. CO 4 - To understand the fundamental concepts of plant anatomy and embryology. CO 5 - To study the effect of various physical factors on photosynthesis.
11	BU232NM1	Non Major Elective NME II : Mushroom Cultivation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science. PO 4 - To enhance leadership qualities, team spirit and communication skills to face challenging competitive examinations for a better developmental carrier.	PSO 1 - To implement the concept of science and technology to foster the traditional and modern techniques for solving the complex problems in Plant Biology. PSO 5 - To enhance capacity to think critically; ability to design and execute experiments independently and/or team under multidisciplinary settings.	CO 1 - To recall various types and categories of mushroom. CO 2 - To explain about various types of food technologies associated with mushroom industry. CO 3 - To apply techniques studied for cultivation of various types of mushrooms. CO 4 - To analyze and decipher the environmental factors and economic value associated with mushroom cultivation. CO 5 - To develop new methods and strategies to contribute to mushroom production.
12	BU232SE1	Skill Enhancement Course SEC I : Botanical Garden and Landscaping		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 4 - To enhance leadership qualities, team spirit and communication skills to face challenging competitive examinations for a better developmental carrier.	PSO 1 - To implement the concept of science and technology to foster the traditional and modern techniques for solving the complex problems in Plant Biology. PSO 4 - To design scientific experiments independently and to generate useful information to address various issues in botany.	CO 1 - To know about the fundamental concepts of gardening and landscaping. CO 2 - To provide an overview of various gardening styles and its scope in recreation and bio-aesthetic planning. CO 3 - To illustrate the significance of garden adornments and propagation structures. CO 4 - To create the design outdoor and indoor gardens and inculcate entrepreneurial skills for landscaping. CO 5 - To inculcate entrepreneurial skills in students for creative landscaping design using cad software.
13	BC2031	Major Core III - Archegoniate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 5 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To implement the concept of science and technology to foster the traditional and modern techniques for solving the complex problems in Plant Biology. PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To describe the general characters of early land plants. CO 2 - To interpret the ecological and economic and describe the external, internal and reproduction of archegoniate importance of archegoniate. CO 3 - To describe the external, internal and reproduction of archegoniate. CO 4 - To differentiate life cycle patterns of archegoniate. CO 5 - To classify Cryptogams and comment on the stellar evolution in pteridophytes. CO 6 - To compare the fossil members of pteridophytes and gymnosperms.
14	BC2032	Major Elective -I (a) Herbal Botany	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To enhance leadership qualities, team spirit and communication skills to face challenging competitive examinations for a better developmental carrier. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To implement the concept of science and technology to foster the traditional and modern techniques for solving the complex problems in Plant Biology. PSO 2 - To apply the contextual knowledge in Botany to improve the supply of medicines, food, fibers and other plant products to the society.	CO 1 - To develop skills to grow herbs and empower entrepreneurship. CO 2 - To compare the side effects of allopathic medicine with native medicine. CO 3 - To compare the different types of indigenous medicine. CO 4 - To incorporate the novel values of herbs as food supplement. CO 5 - To understand the chemical constituents of important medicinal herbs. CO 6 - To demonstrate the use of locally available medicinal plants.
15	BC2033	Major Elective - I (b) Nursery and Gardening	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To implement the concept of science and technology to foster the traditional and modern techniques for solving the complex problems in Plant Biology. PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To incorporate lab to land programme by raising home garden and nurseries. CO 2 - To evaluate seed dormancy. CO 3 - To practice the different techniques in propagating horticultural plants. CO 4 - To explain the needed fertilizers in soil management. CO 5 - To understand the external factors necessary for plant growth. CO 6 - To explain the cultivation of different vegetable.

16	BC2034	Major Elective - I (c) Agricultural Botany	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To implement the concept of science and technology to foster the traditional and modern techniques for solving the complex problems in Plant Biology. PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To understand form, function and process within the plant. CO 2 - To analyse seed technology. CO 3 - To understand the physiological process within the plants in order to appreciate the diversity in plants and crops. CO 4 - To choose crops for different environments. CO 5 - To identify the factors affecting the crops. CO 6 - To develop skills by cultivating cereals and pulse.
17	BA2031	Allied II - Theory : Plant Diversity - I (Algae, Fungi, Bryophyta and Pteridophyta)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science. PO 2 - To create innovative ideas through laboratory experiments.	PSO 1 - To implement the concept of science and technology to foster the traditional and modern techniques for solving the complex problems in Plant Biology. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To recall the main features of angiosperms. CO 2 - To understand the respiratory processes carried out by plants. CO 3 - To apply their physical and biochemical knowledge to evaluate the processes involved in photosynthesis. CO 4 - To analyze the various processes involving in water uptake and transport in plants. CO 5 - To classify the different plants by the natural, artificial and phylogenetic classification. CO 6 - To interpret the role of growth hormones in plants.
18	BC20S1	Self Learning Course : Plant Resource Utilization	<input checked="" type="checkbox"/>				PO 3 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 4 - To enhance leadership qualities, team spirit and communication skills to face challenging competitive examinations for a better developmental carrier.	PSO 1 - To implement the concept of science and technology to foster the traditional and modern techniques for solving the complex problems in Plant Biology. PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To enable the students to acquire knowledge in plant resources. CO 2 - To gain interest in value added crops.
19	BC2041	Major Core IV - Plant Ecology and Phytogeography	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To implement the concept of science and technology to foster the traditional and modern techniques for solving the complex problems in Plant Biology. PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To recall the main features of angiosperms. CO 2 - To understand the respiratory processes carried out by plants. CO 3 - To apply their physical and biochemical knowledge to evaluate the processes involved in photosynthesis. CO 4 - To analyze the various processes involving in water uptake and transport in plants. CO 5 - To classify the different plants by the natural, artificial and phylogenetic classification. CO 6 - To interpret the role of growth hormones in plants.
20	BC2042	Major Elective - II (a) Biological Resources	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To implement the concept of science and technology to foster the traditional and modern techniques for solving the complex problems in Plant Biology. PSO 5 - To seek entrepreneurship through skill based, value added and related courses.	CO 1 - To realise the vast expansion of biomass systems, both for "green energy" and for other renewable resources. CO 2 - To understand the nutritive value of Single Cell Protein and learnt the techniques of producing SCP from microorganisms. CO 3 - To recognize the need to protect and conserve Mother Nature. CO 4 - To find ways to have sustainable management of natural resources. CO 5 - To gain awareness of career options in the biological sciences.
21	BC2043	Elective - II (b) Food Science	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To implement the concept of science and technology to foster the traditional and modern techniques for solving the complex problems in Plant Biology. PSO 2 - To apply the contextual knowledge in Botany to improve the supply of medicines, food, fibers and other plant products to the society.	CO 1 - To list the different constituents of food, methods of cooking and preservation. CO 2 - To demonstrate the side effects of food additives. CO 3 - To prepare value-added products of milk and vegetables. CO 4 - To explain the industrial production of beer, ethyl alcohol, vinegar and amylase. CO 5 - To design balanced diet. CO 6 - To test for detection of food adulterants and colourants.
22	BC2044	Elective – II (c) Biodiversity and Human Welfare	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To implement the concept of science and technology to foster the traditional and modern techniques for solving the complex problems in Plant Biology. PSO 7 - To utilize the scientific explanation for the unity and diversity of life on earth.	CO 1 - To record the biodiversity taxa at different region. CO 2 - To assemble with any biodiversity management organizations at national or international level. CO 3 - To organize biodiversity awareness programmes. CO 4 - To apply the knowledge on conservation in day to day life. CO 5 - To assess the value of biodiversity through valid methodologies. CO 6 - To categorize the hot spots of biodiversity in national level.

23	BA2041	Allied II - Theory : Plant Diversity - II (Gymnosperms, Angiosperms and Plant Physiology)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science. PO 5 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To develop a strong and competent knowledge in Botany . PSO 7 - To utilize the scientific explanation for the unity and diversity of life on earth.	CO 1 - To recognize the feature of plant anatomy: at the cell, tissue and organ level. CO 2 - To differentiate Prokaryotes from Eukaryotes. CO 3 - To know the complexity of xylem and phloem. CO 4 - To compare and contrast the organization of mitotic and meiotic cell division in plant and to learn about cell cycle. CO 5 - To compare the structure and functions of living and non - living inclusions in plants. CO 6 - To understand about the difference between the primary and secondary structures of plant.
24	BC20P2	Major Practical Paper - II Archegoniate & Plant Ecology and Phytogeography	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 5 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To develop a strong and competent knowledge in Botany . PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To identify the archegoniate from their morphological features. CO 2 - To examine the internal anatomy of few bryophytes, pteridophytes and gymnosperms. CO 3 - To prepare plant material for microscopic observation. CO 4 - To gain knowledge on fossil plants. CO 5 - To identify the archegoniate plants through field visit.
25	BA20P2	Allied II - Practical : Plant Diversity I & II and Plant Physiology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 7 - To utilize the scientific explanation for the unity and diversity of life on earth.	CO 1 - To dissect the floral parts of the prescribed families and explain with appropriate diagrams. CO 2 - To identify electron micrographs of the cell organelles and tissues. CO 3 - To draw the anatomical structures of plant parts. CO 4 - To detect the tissues and stomatal types. CO 5 - To set-up the experiments to show physiological process. CO 6 - To examine the non living inclusions.
26	BC20S2	Self Learning Course : Algal Biotechnology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To understand the potentiality of algal resources CO 2 - To develop skill to become employable.
27	BC20S1	Major Core V - Taxonomy of Angiosperms and Economic Botany	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 5 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 7 - To utilize the scientific explanation for the unity and diversity of life on earth.	CO 1 - To relate the modifications in plant parts. CO 2 - To differentiate the artificial, natural and phylogenetic classification and learn about ICN rules. CO 3 - To evaluate the taxonomists of India. CO 4 - To recall the characters of some important families. CO 5 - To understand the economically important products of plants and their use at various levels. CO 6 - To construct digital herbarium and learn about Herbarium techniques.
28	BC20S2	Major Core VI - Biochemistry and Biophysics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 5 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To apply the usage of PH and buffers in biological experiments. CO 2 - To understand the importance of Bio-molecules. CO 3 - To describe its biological roles and significance of lipids. CO 4 - To analyze enzyme activity. CO 5 - To demonstrate thermodynamic principles in biological energy conversion
29	BC20S3	Major Core VII - Microbiology and Plant Pathology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To get an insight on the structure and reproduction of bacteria and viruses. CO 2 - To explore the role and relevance of bacteria and viruses in the field of microbiology. CO 3 - To learn the sterilization techniques and preparation of culture media. CO 4 - To become an expert in operating microbiological instruments thereby undertaking careers in that field. CO 5 - To understand the economic and pathological importance of bacteria, viruses and fungi.
30	BC20PR	Major - Elective III - Research Project	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To identify a research problem relevant to Botany. CO 2 - To design and conduct an experiment to analyse the problem. CO 3 - To write research reports and present results in the scientific community. CO 4 - To develop skills to serve in Life science related industries and agencies. CO 5 - To develop required skills to present and publish articles.
31	BC2061	Major Core VIII - Genetics, Biostatistics and Bioinformatics	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To face challenging competitive examinations that offer rewarding careers. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To understand Mendelian principle and predict genetic inheritance patterns. CO 2 - To analyze the facts of non-Mendelian inheritance and have conceptual knowledge on alleles and their linkage. CO 3 - To examine the various stages of cell division and also a clear knowledge on DNA structure. CO 4 - To generate biological interpretations and conclusions from data of scientific research. CO 5 - To develop skills to become employable as professionals in biochemical industries.

32	BC2062	Major Core IX - Biotechnology and Molecular Biology		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 6 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To acquaint the core concepts and fundamentals of plant biotechnology. CO 2 - To develop competency on different types of plant tissue culture. CO 3 - To understand the mechanisms of genetic information. CO 4 - To get an insight of chromosome abnormalities and related human syndromes. CO 5 - To develop skills to become employable as professionals in Biotechnology Industries.
33	BC2063	Major Core X - Plant Physiology and Metabolism	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To understand water relation of plants with respect to various physiological processes. CO 2 - To explain efficiency symptoms of macro and micronutrients in plants. CO 3 - To relate complementary metabolic pathways such as photosynthesis and respiration in energy acquisition. CO 4 - To analyse nitrogen metabolism and its significance. CO 5 - To assess dormancy and germination in plants.
34	BC2064	Major - Elective IV (a) Marine Botany	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To describe the types of marine habitat and their relationship with environment. CO 2 - To compare the threats and conservation of seaweeds and sea grasses. CO 3 - To evaluate how natural events and human activities affect coastal habitats. CO 4 - To create a broad knowledge about themarine products and their economic value. CO 5 - To describe the role of mangroves in conservation of marine flora and fauna.
35	BC2065	Major - Elective IV (b) Organic Farming	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To understand the concept of organic farming and its importance. CO 2 - To apply the knowledge of organic nutrients and organic pest management in farming. CO 3 - To demonstrate the use of biocontrol agents, botanicals and other plant growthpromoting preparations in organic farming. CO 4 - To learn the techniques of different concepts of composting methods. CO 5 - To empower the employment opportunity of rural youth at village level in organic market as organic growers, stakeholders, and entrepreneurs.
36	BC2066	Major - Elective IV (c) Ecotourism	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To recognize the values of natural heritage. CO 2 - To create environmental and cultural awareness to develop sustainable eco-tourism spots. CO 3 - To understand the impact of ecotourism on economy, socio-economic and environment of a country. CO 4 - To appreciate and admire the varieties of tourist centres. CO-5 To evaluate the role of local community in eco-tourism
37	BC20P3	Major Practical III - Taxonomy and Economic Botany & Biochemistry and Biophysics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To understand and identify the locally available common plants. CO 2 - To identify the family and describe the plant parts and floral parts. CO 3 - To record the economically important products from the prescribed families in the syllabus. CO 4 - To prepare buffer solution for biological and biotechnological experiments. CO 5 - To estimate and compare the biomolecules quantitatively. CO 6 - To identify spotters (i.e., Photos/Models/Instruments) related to biochemistry and biophysics. CO 7 - To do qualitative analysis of glucose, starch, protein and lipids
38	BC20P4	Major Practical IV - Genetics, Biostatistics and Bioinformatics & Biotechnology and Molecular Biology		<input checked="" type="checkbox"/>			PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To identify the different stages of mitosis from the root tip squash of Onion. CO 2 - To solve genetic problems related to monohybrid, dihybrid ratio and interaction of genes. CO 3 - To interpret experimental data using biostatistics. CO 4 - To identify spotters (Photos/Models). CO 5 - To be familiar with sterilization techniques. CO 6 - To demonstrate Preparation of MS medium. CO 7 - To analyse PCR Technique: Southern and Northern Blotting technique.
39	BC20P5	Major Practical V - Microbiology and Plant Pathology & Plant Physiology and Metabolism	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To apply sterilization technique and prepare sterile bacterial culture media. CO 2 - To detect coliform bacteria in water samples. CO 3 - To identify the spotters. CO 4 - To know the importance of pasteurization through field visit. CO 5 - To demonstrate and interpret the results to physiology experiments. CO 6 - To analyse the relationship between absorption and transpiration

40	SEC203	Skill Enhancement Course (SEC) - Global Environmental Issues	<input checked="" type="checkbox"/>				PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To analyse the causes and effects of pollution on various spheres of earth. CO 2 - To understand the causes of climate change and its effect on environment. CO 3 - To examine the anthropogenic activities in soil desertification. CO 4 - To be aware of the importance of wet lands. CO 5 - To explain the reasons for biodiversity loss.
41	BP231CC1	Core Course I : Plant Diversity - I Algae, Fungi, Lichens & Bryophytes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 5 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To explain the various aspects of life sciences including Biochemistry, Cell and Molecular Biology, Biosystematics, Genetics, Evolution, Physiology, Developmental Biology, Exobiology, Immunology, Microbiology, Endocrinology, Bioinformatics, Biotechnology and Nanobiology. PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To relate to the structural organizations of algae, fungi, lichens and Bryophytes. CO 2 - To demonstrate both the theoretical and practical knowledge in understanding the diversity of basic life forms and their importance. CO 3 - To explain life cycle patterns in algae, fungi, lichens and Bryophytes. CO 4 - To compare and contrast the mode of reproduction in diverse groups of basic plant forms. CO 5 - To discuss and develop skills for effective conservation and utilization of lower plant forms.
42	BP231CC2	Core Course II : Plant Pteridophyta, Gymnosperms and Palaeobotany	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 5 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To explain the various aspects of life sciences including Biochemistry, Cell and Molecular Biology, Biosystematics, Genetics, Evolution, Physiology, Developmental Biology, Exobiology, Immunology, Microbiology, Endocrinology, Bioinformatics, Biotechnology and Nanobiology. PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To recall on classification, recent trends in phylogenetic relationship, General characters of Pteridophytes and Gymnosperms. CO 2 - To learn the morphological /anatomical organization, life history of major types of Pteridophytes and Gymnosperms . CO 3 - To explain comprehend the economic importance of Pteridophytes, Gymnosperms and fossils. CO 4 - To understand the evolutionary relationship of Pteridophytes and Gymnosperms. CO 5 - To awareness on fossil types, fossilization and fossil records of Pteridophytes and Gymnosperms.
43	BP231EC1	Elective Course I : a) Microbiology, Immunology and Plant Pathology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	PO 1 - To carry out internship programmes and research projects to develop scientific skills and innovative ideas. PO 5 - To utilize the obtained scientific knowledge to create eco- friendly environment..	PSO 1 - To explain the various aspects of life sciences including Biochemistry, Cell and Molecular Biology, Biosystematics, Genetics, Evolution, Physiology, Developmental Biology, Exobiology, Immunology, Microbiology, Endocrinology, Bioinformatics, Biotechnology and Nanobiology. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To recognize the general characteristics of microbes, plant defense and immune cells. CO 2 - To explain about the stages in disease development and various defense mechanisms in plants and humans. CO 3 - To elucidate concepts of microbial interactions with plant and humans. CO 4 - To analyze the importance of harmful and beneficial microbes and immune system. CO 5 - To determine and interpret the detection of pathogens and appreciate their adaptive strategies.
44	BP231EC2	Elective Course I : b) Conservation of natural resources and policies		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	PO 1 - To carry out internship programmes and research projects to develop scientific skills and innovative ideas. PO 5 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To explain the various aspects of life sciences including Biochemistry, Cell and Molecular Biology, Biosystematics, Genetics, Evolution, Physiology, Developmental Biology, Exobiology, Immunology, Microbiology, Endocrinology, Bioinformatics, Biotechnology and Nanobiology. PSO 5 - To integrate the knowledge of Botany for global sustainable development.	CO 1 - To understand the concept of different natural resources and their Utilization. CO 2 - To critically analyze the sustainable utilization land, water, forest and energy resources. CO 3 - To evaluate the management strategies of different natural Resources. CO 4 - To reflect upon the different national and international efforts in resource management and their conservation. CO 5 - To state the various environmental policy passed to conserve the natural resources.
45	BP231EC3	Elective Course I : c) Mushroom cultivation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To carry out internship programmes and research projects to develop scientific skills and innovative ideas. PO 5 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To explain the various aspects of life sciences including Biochemistry, Cell and Molecular Biology, Biosystematics, Genetics, Evolution, Physiology, Developmental Biology, Exobiology, Immunology, Microbiology, Endocrinology, Bioinformatics, Biotechnology and Nanobiology. PSO 2 - To identify the potency of plant resources in contemporary research and visualize future thrust areas in Botany.	CO 1 - To knowledge on identification of edible and toxic mushrooms belonging to Ascomycota and Basidiomycota. CO 2 - To outline the nutraceutical properties of edible mushrooms. CO 3 - To knowledge on cultivation techniques of edible and medicinal mushrooms. CO 4 - To understand the harvest and post-harvest techniques of mushroom crops. CO 5 - To knowledge on the production and marketing strategies for mushrooms.
46	BP231EC4	Elective Course II : a) Ethnobotany, Naturopathy and Traditional Health care	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	PO 2 - To analyze complex problems, think independently, formulate and perform quality research. PO 5 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 2 - To identify the potency of plant resources in contemporary research and visualize future thrust areas in Botany.	CO 1 - To understand the applied facet of botany and acquire a complete knowledge about the cultivation methods in algae. CO 2 - To realization of the commercial potential of algal products. CO 3 - To analyze emerging areas of algal biotechnology for identifying therapeutic importance of algal products and their uses. CO 4 - To gain more information about algae genetics. CO 5 - To translate various algal technologies for the benefit of the ecosystem.
47	BP231EC5	Elective Course II : b) Algal Technology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 5 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To explain the various aspects of life sciences including Biochemistry, Cell and Molecular Biology, Biosystematics, Genetics, Evolution, Physiology, Developmental Biology, Exobiology, Immunology, Microbiology, Endocrinology, Bioinformatics, Biotechnology and Nanobiology. PSO 5 - To integrate the knowledge of Botany for global sustainable development.	CO 1 - To recall or remember concept of ethnobotany. CO 2 - To understand the life style and traditional practices of plants by Indian tribals. CO 3 - To highlight the role of Non-Timber Forest products for livelihood of tribal people of India. CO 4 - To assess the methods to transform ethnobotanical knowledge into value added products. CO 5 - To build idea to make digitization of ethnobotanical knowledge.

48	BP231EC6	Elective Course II : c) Herbal Technology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To analyze complex problems, think independently, formulate and perform quality research. PO 5 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 2 - To identify the potency of plant resources in contemporary research and visualize future thrust areas in Botany.	CO 1 - To recollect the importance of herbal technology. CO 2 - To understand the classification of crude drugs from various botanical sources. CO 3 - To analyze on the application of secondary metabolites in modern medicine. CO 4 - To create new drug formulations using therapeutically valuable phytochemical compounds for the healthy life of society. CO 5 - To comprehend the current trade status and role of medicinal plants in socio economic growth.
49	BP231CP1	Core Lab Course I: Laboratory Course - I : Covering Core Papers - I & II	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	PO 2 - To analyze complex problems, think independently, formulate and perform quality research. PO 5 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To explain the various aspects of life sciences including Biochemistry, Cell and Molecular Biology, Biosystematics, Genetics, Evolution, Physiology, Developmental Biology, Exobiology, Immunology, Microbiology, Endocrinology, Bioinformatics, Biotechnology and Nanobiology. PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To recall and applying the basic keys to distinguish at species level identification of important algae and fungi through its structural organizations. CO 2 - To demonstrate practical skills in thallophytes, Pteridophytes and Gymnosperms. CO 3 - To describe the structure of algae, fungi, lichens, Bryophytes, Pteridophytes and Gymnosperms. CO 4 - To determine the importance of structural diversity in the evolution of plant forms. CO 5 - To formulate techniques to isolate and culture of alga and fungi as well as to understand the diversity of plant forms.
50	BP232CC1	Core Course III : Taxonomy of Angiosperms and Economic Botany	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	PO 1 - To carry out internship programmes and research projects to develop scientific skills and innovative ideas. PO 2 - To analyze complex problems, think independently, formulate and perform quality research.	PSO 1 - To explain the various aspects of life sciences including Biochemistry, Cell and Molecular Biology, Biosystematics, Genetics, Evolution, Physiology, Developmental Biology, Exobiology, Immunology, Microbiology, Endocrinology, Bioinformatics, Biotechnology and Nanobiology. PSO 2 - To identify the potency of plant resources in contemporary research and visualize future thrust areas in Botany.	CO 1 - To recollect the basic concepts of morphology of leaves, flowers, identify the types of compound leaves, inflorescence and fruits describe their characteristic features. CO 2 - To explain the principles of taxonomy, summarize the taxonomic hierarchy, define binomial nomenclature. CO 3 - To explain the various types of classification, distinguish its advantages and disadvantages construction of floral formula and floral diagram. CO 4 - To identify the plants bases on taxonomical characters. CO 5 - To illustrate and explain the characteristic features and list out the economic importance of the families.
51	BP232CC2	Core Course IV: Plant Anatomy and Embryology of Angiosperms	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To carry out internship programmes and research projects to develop scientific skills and innovative ideas. PO 2 - To analyze complex problems, think independently, formulate and perform quality research.	PSO 1 - To explain the various aspects of life sciences including Biochemistry, Cell and Molecular Biology, Biosystematics, Genetics, Evolution, Physiology, Developmental Biology, Exobiology, Immunology, Microbiology, Endocrinology, Bioinformatics, Biotechnology and Nanobiology. PSO 3 - To identify the potency of plant resources in contemporary research and visualize future thrust areas in Botany.	CO 1 - To learn the structures, functions and roles of apical vs lateral meristems in monocot and dicot plant growth. CO 2 - To study the function and organization of woody stems derived from secondary growth in dicot and monocot plants. CO 3 - To apply their idea on sectioning and dissection of plants to demonstrate various stages of plant development. CO 4 - To understand the various concepts of plant development and reproduction. CO 5 - To profitably manipulate the process of reproduction in plants with a professional and entrepreneurial mindset.
52	BP232CC3	Core Course V: Ecology, Phytogeography, Conservation Biology and Intellectual Property Rights	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To carry out internship programmes and research projects to develop scientific skills and innovative ideas. PO 2 - To analyze complex problems, think independently, formulate and perform quality research.	PSO 1 - To explain the various aspects of life sciences including Biochemistry, Cell and Molecular Biology, Biosystematics, Genetics, Evolution, Physiology, Developmental Biology, Exobiology, Immunology, Microbiology, Endocrinology, Bioinformatics, Biotechnology and Nanobiology. PSO 8 - To disseminate knowledge on conservation of biodiversity and protection of environment.	CO 1 - To understand the scope and importance of population ecology, plant communities and ecosystem ecology. CO 2 - To understand the applied aspect of environmental botany. CO 3 - To spot the sources and pollution and seek remedies to mitigate and rectify them. CO 4 - To identify different plant communities, categorize plant biomes and identify threatened, endangered plant species and create awareness program in protection of biodiversity. CO 5 - To analyze insight into the vegetation types, species interaction and their importance and the factors influencing the environmental conditions.
53	BP232CP1	Core Lab Course II : Lab Course (for Core III, IV & V)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 4 - To develop innovative initiatives to sustain ecofriendly environment.	PSO 1 - To explain the various aspects of life sciences including Biochemistry, Cell and Molecular Biology, Biosystematics, Genetics, Evolution, Physiology, Developmental Biology, Exobiology, Immunology, Microbiology, Endocrinology, Bioinformatics, Biotechnology and Nanobiology. PSO 7 - To carryout scientific experiments independently or in collaboration with interdisciplinary or multidisciplinary approaches.	CO 1 - To gain recent advances in plant morphological and floral characteristics. CO 2 - To understand about different floral characteristics and artificial key preparation which employed for plant identification and conservation. CO 3 - To relation with plant anatomy and embryology. CO 4 - To apply their idea on sectioning and dissection of plants to demonstrate various stages of plant development. CO 5 - To know about different vegetation sampling methods.
54	BP232EC1	Elective Course III : a) Biostatistics		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		PO 2 - To analyze complex problems, think independently, formulate and perform quality research. PO 6 - To employ appropriate analysis tools and ICT in a range of learning scenarios, demonstrating the capacity to find, assess, and apply relevant information sources.	PSO 1 - To explain the various aspects of life sciences including Biochemistry, Cell and Molecular Biology, Biosystematics, Genetics, Evolution, Physiology, Developmental Biology, Exobiology, Immunology, Microbiology, Endocrinology, Bioinformatics, Biotechnology and Nanobiology. PSO 5 - To acquire basic knowledge on principles and applications of laboratory instruments and adequate skills to handle them.	CO 1 - To create and interpret visual representations of quantitative information, such as graphs or charts. CO 2 - To solve problems quantitatively using appropriate arithmetical, algebraic, or statistical methods. CO 3 - To know the latest version using in statistical tools and apply the tools to interpret the results. CO 4 - To develop their competence in hypothesis testing and interpretation. CO 5 - To understand why biologists need a background in statistics.

55	BP232EC2	Elective Course III: b) Intellectual Property Rights	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 2 - To analyze complex problems, think independently, formulate and perform quality research.</p> <p>PO 7 - To learn independently for lifelong executing professional, social and ethical responsibilities leading to sustainable development.</p>	<p>PSO 1 - To explain the various aspects of life sciences including Biochemistry, Cell and Molecular Biology, Biosystematics, Genetics, Evolution, Physiology, Developmental Biology, Exobiology, Immunology, Microbiology, Endocrinology, Bioinformatics, Biotechnology and Nanobiology.</p> <p>PSO 5 - To acquire basic knowledge on principles and applications of laboratory instruments and adequate skills to handle them.</p>	<p>CO 1 - To recall the history and foundation of Intellectual Property.</p> <p>CO 2 - To understand the differences of Property and Assets and Various categories of Intellectual Creativity.</p> <p>CO 3 - To apply the methods to protect the Intellectual Property.</p> <p>CO 4 - To differentiate if the Said Intangible property be protected under law or protected by strategy.</p> <p>CO 5 - To create a recommendation document on the methods and procedures of protecting the said IP and search documents to substantiate them.</p>
56	BP232EC3	Elective Course III : c) Applied bioinformatics	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 2 - To analyze complex problems, think independently, formulate and perform quality research.</p> <p>PO 6 - To employ appropriate analysis tools and ICT in a range of learning scenarios, demonstrating the capacity to find, assess, and apply relevant information sources.</p>	<p>PSO 1 - To explain the various aspects of life sciences including Biochemistry, Cell and Molecular Biology, Biosystematics, Genetics, Evolution, Physiology, Developmental Biology, Exobiology, Immunology, Microbiology, Endocrinology, Bioinformatics, Biotechnology and Nanobiology.</p> <p>PSO 6 - To choose and apply appropriate tools, techniques, resources, etc. to perform various experiments in Botany.</p>	<p>CO 1 - To familiarize with the tools of DNA sequence analysis.</p> <p>CO 2 - To use and explain the application of bioinformatics.</p> <p>CO 3 - To master the aspects of protein – protein interaction, BLAST and PSI-BLAST.</p> <p>CO 4 - To describe the features of local and multiple alignments.</p> <p>CO 5 - To interpret the characteristics of phylogenetic methods and bioinformatics applications.</p>
57	BP232EC4	Elective Course IV : a) Research methodology, computer applications & bioinformatics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 2 - To analyze complex problems, think independently, formulate and perform quality research.</p> <p>PO 5 - To utilize the obtained scientific knowledge to create eco- friendly environment..</p>	<p>PSO 1 - To explain the various aspects of life sciences including Biochemistry, Cell and Molecular Biology, Biosystematics, Genetics, Evolution, Physiology, Developmental Biology, Exobiology, Immunology, Microbiology, Endocrinology, Bioinformatics, Biotechnology and Nanobiology.</p> <p>PSO 6 - To choose and apply appropriate tools, techniques, resources, etc. to perform various experiments in Botany.</p>	<p>CO 1 - To realize the need of centrifuges and chromatography and their uses in research.</p> <p>CO 2 - To learn the principles and applications of electrophoresis.</p> <p>CO 3 - To construct the phylogenetic trees for similar characteristic feature of plant genomes and study de novo drug design through synthetic biology.</p> <p>CO 4 - To understand the concept of pairwise alignment of DNA sequences using algorithms.</p> <p>CO 5 - To interpret the features of local and multiple alignments.</p>
58	BP232EC5	Elective Course IV : b) Medicinal Botany	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 2 - To analyze complex problems, think independently, formulate and perform quality research.</p> <p>PO 6 - To employ appropriate analysis tools and ICT in a range of learning scenarios, demonstrating the capacity to find, assess, and apply relevant information sources.</p>	<p>PSO 1 - To explain the various aspects of life sciences including Biochemistry, Cell and Molecular Biology, Biosystematics, Genetics, Evolution, Physiology, Developmental Biology, Exobiology, Immunology, Microbiology, Endocrinology, Bioinformatics, Biotechnology and Nanobiology.</p> <p>PSO 8 - To disseminate knowledge on conservation of biodiversity and protection of environment.</p>	<p>CO 1 - To know about the fundamental concepts of gardening and landscaping.</p> <p>CO 2 - To provide an overview of various gardening styles and its scope in recreation and bio-aesthetic planning.</p> <p>CO 3 - To illustrate the significance of garden adornments and propaga.</p>
59	BP232EC6	Elective Course IV : c) Phytochemistry	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 2 - To analyze complex problems, think independently, formulate and perform quality research.</p> <p>PO 6 - To employ appropriate analysis tools and ICT in a range of learning scenarios, demonstrating the capacity to find, assess, and apply relevant information sources.</p>	<p>PSO 1 - To explain the various aspects of life sciences including Biochemistry, Cell and Molecular Biology, Biosystematics, Genetics, Evolution, Physiology, Developmental Biology, Exobiology, Immunology, Microbiology, Endocrinology, Bioinformatics, Biotechnology and Nanobiology.</p> <p>PSO 3 - To identify the potency of plant resources in contemporary research and visualize future thrust areas in Botany.</p>	<p>CO 1 - To understand the role of plants in the survival of human beings and other organisms.</p> <p>CO 2 - To recognition of the contribution made by primitive people in exploration of plant knowledge to all eviate common diseases and development of systems of medicine.</p> <p>CO 3 - To gain knowledge on different classes of phytochemicals present in higher and lower plants species.</p> <p>CO 4 - To demonstrate the various aspects of extraction, isolation and characterization of secondary metabolites.</p> <p>CO 5 - To know the methods of screening of secondary metabolites for various biological properties.</p>
60	BP232SE1	Skill Enhancement Course I : Nursery and Gardening	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 4 - To develop innovative initiatives to sustain ecofriendly environment.</p> <p>PO 6 - To employ appropriate analysis tools and ICT in a range of learning scenarios, demonstrating the capacity to find, assess, and apply relevant information sources.</p>	<p>PSO 1 - To explain the various aspects of life sciences including Biochemistry, Cell and Molecular Biology, Biosystematics, Genetics, Evolution, Physiology, Developmental Biology, Exobiology, Immunology, Microbiology, Endocrinology, Bioinformatics, Biotechnology and Nanobiology.</p> <p>PSO 3 - To identify the potency of plant resources in contemporary research and visualize future thrust areas in Botany.</p>	<p>CO 1 - To recognize the basic process required for growing and maintaining plants in nurseries.</p> <p>CO 2 - To explain the different methods of plant propagation and various gardening styles.</p> <p>CO 3 - To apply techniques for effective hardening of plants and computer applications for creative gardening.</p> <p>CO 4 - To compare and contrast cultivation of different vegetables and growth of plants in nursery and gardening.</p> <p>CO 5 - To develop new strategies to enhance growth and quality of nursery plants.</p>
61	PB2031	Core VII - Taxonomy of Angiosperms	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 3 - To become successful professionals and entrepreneurs.</p> <p>PO 6 - To employ appropriate analysis tools and ICT in a range of learning scenarios, demonstrating the capacity to find, assess, and apply relevant information sources.</p>	<p>PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations.</p> <p>PSO 5 - To integrate the knowledge of botany for global sustainable development.</p>	<p>CO 1 - To differentiate between natural and artificial system of classification.</p> <p>CO 2 - To apply sketches to identify the flora.</p> <p>CO 3 - To collect and prepare herbaria for future use.</p> <p>CO 4 - To record the rules and regulations framed by ICBN.</p> <p>CO 5 - To interpret biological knowledge in comparing and ranking plants.</p> <p>CO 6 - To evaluation of plants by using dichotomous keys.</p>



62	PB2032	Core VIII – Genetics and Molecular Biology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To carry out internship programmes and research projects to develop scientific skills and innovative ideas. PO 6 - To employ appropriate analysis tools and ICT in a range of learning scenarios, demonstrating the capacity to find, assess, and apply relevant information sources.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 3 - To evaluate ecological interconnectedness of life on earth.	CO 1 - To understand the organization of cell organelles and genes. CO 2 - To differentiate between mitochondrial DNA and chloroplast DNA. CO 3 - To evaluate the dissociation and re -association kinetics of DNA. CO 4 - To construct different types of plasmids and operons . CO 5 - To analyze Transcription and Translation of Prokaryotes and Eukaryotes. CO 6 - To evaluate the problems in genetics.
63	PB2033	Elective III – (a) Horticulture	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To become successful professionals and entrepreneurs. PO 6 - To employ appropriate analysis tools and ICT in a range of learning scenarios, demonstrating the capacity to find, assess, and apply relevant information sources.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 5 - To integrate the knowledge of botany for global sustainable development.	CO 1 - To categorize the propagation of horticultural crops. CO 2 - To describe orchard cultivation. CO 3 - To design a kitchen garden in growing vegetables and greens. CO 4 - To state the importance and principles of lawns, topiary and pergolas. CO 5 - To understand the methods involved in hybridization. CO 6 - To evaluate the molecular approaches for crop improvement.
64	PB2034	Elective III – (b) Forestry	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To utilize the obtained scientific knowledge to create eco- friendly environment. PO 6 - To employ appropriate analysis tools and ICT in a range of learning scenarios, demonstrating the capacity to find, assess, and apply relevant information sources.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 5 - To integrate the knowledge of botany for global sustainable development.	CO 1 - To categorize the types of forests in Tamilnadu. CO 2 - To identify the reasons for degradation of forest. CO 3 - To summarize the methods in managing and conserving the forest. CO 4 - To understand the objectives, advantages and disadvantages of agroforestry. CO 5 - To determine the role of botanical gardens,zoos, national parks, and sanctuaries. CO 6 - To evaluate the utilization of forest.
65	PB20PR	Research Project	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To utilize the obtained scientific knowledge to create eco- friendly environment. PO 6 - To employ appropriate analysis tools and ICT in a range of learning scenarios, demonstrating the capacity to find, assess, and apply relevant information sources.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 6 - To choose and apply appropriate tools, techniques, resources,etc. to perform various experiments in Botany.	CO 1 - To explore new areas of research in Botany and alliedfieldof lifescience. CO 2 - To analyze are search problem and construct tools for data collection. CO 3 - To write research reports and present results in thescientific community. CO 4 - To develop skills to serve in Life science related industries and agencies. CO 5 - To develop skills to publish articles in reputed journals.
66	PB20S1	SLC - Biology for competitive exam – I	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To utilize the obtained scientific knowledge to create eco- friendly environment. PO 6 - To employ appropriate analysis tools and ICT in a range of learning scenarios, demonstrating the capacity to find, assess, and apply relevant information sources.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 5 - To integrate the knowledge of botany for global sustainable development.	CO 1 - To understand the organization of cell organelles. CO 2 - To know the molecular and metabolic mechanisms of plants. CO 3 - To evaluate gene interactions. CO 4 - To analyze Transcription and Translation of Prokaryotes and Eukaryotes. CO 5 - To classify the plantdiseases.
67	PB2041	Core IX - Plant Physiology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To utilize the obtained scientific knowledge to create eco- friendly environment. PO 6 - To employ appropriate analysis tools and ICT in a range of learning scenarios, demonstrating the capacity to find, assess, and apply relevant information sources.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 4 - To apply the acquired conceptual knowledge by connecting disciplinary and interdisciplinary aspects of Botany.	CO 1 - To relate the physical and chemical process occurring in plants. CO 2 - To understand the molecular and metabolic mechanisms of plants. CO 3 - To generalize a minor research using their theory knowledge. CO 4 - To examine, compare and conclude the stressed and stress free plants. CO 5 - To measure the biological mechanisms that takes place inside the plants. CO 6 - To design a protocol for plant regeneration under aseptic condition.
68	PB2042	Core X – Plant Ecology and Phytogeography	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe. PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 5 - To integrate the knowledge of botany for global sustainable development.	CO 1 - To understand the scope and importance of ecosystem. CO 2 - To distinguish the difference between hydrosere and xerosere. CO 3 - To list out the various food chains in ecosystem. CO 4 - To implement the mode of studying vegetation. CO 5 - To understand the importance of conservation strategies.
69	PB2043	Core XI – Biotechnology & Bioinformatics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe. PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 3 - To experience in seeking external funds for their research from a diversity of resources.	CO 1 - To understand the importance of biotechnology and design a plant tissue culture laboratory. CO 2 - To differentiate batch, continuous and fed batch culture. CO 3 - To evaluate the pros and cons of Transgenic plants. CO 4 - To recall the different aspects of pharmaceuticals. CO 5 - To apply different databases in biological sciences.
70	PB2044	Elective IV – (a) Phytochemistry and Pharmacognosy	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To carry out internship programmes and research projects to develop scientific skills and innovative ideas. PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 3 - To experience in seeking external funds for their research from a diversity of resources.	CO 1 - To classify and understand secondary metabolites in plants. CO 2 - To remember the traditional systems of medicines in terms of Siddha, Ayurvedha, and Unani. CO 3 - To apply phytochemistry in different industries. CO 4 - To create the protocol for healing procedures in ethnobotany. CO 5 - To analyze crude drugs both qualitatively and quantitatively.

71	PB2045	Elective IV – (b) Entrepreneurial Botany	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	PO 3 - To become successful professionals and entrepreneurs. PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 3 - To experience in seeking external funds for their research from a diversity of resources.	CO 1 - To create protocol for the production of Mushroom. CO 2 - To understand the nutritive value of SCP. CO 3 - To justify the impact of organic fertilizers over synthetic fertilizers. CO 4 - To summarize the aesthetic sense of gardening. CO 5 - To know the different funding agencies.
72	PB20P3	Practical III - Taxonomy of Angiosperms & Genetics and Molecular Biology.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To analyse complex problems, think independently, formulate and perform quality research. PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 5 - To integrate the knowledge of botany for global sustainable development.	CO 1 - To isolate the DNA from plant materials. CO 2 - To separation of biomolecules using spectrophotometry. CO 3 - To analyse the floral parts and relate to its corresponding family. CO 4 - To solve genetics related problems.
73	PB20P4	Practical IV - Plant Physiology, Plant Ecology & Phytogeography and Biotechnology & Bioinformatics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	PO 2 - To analyse complex problems, think independently, formulate and perform quality research. PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 3 - To experience in seeking external funds for their research from a diversity of resources.	CO 1 - To analyze DO, BOD and COD of water. CO 2 - To prepare tissue culture media, initiate callus culture, anther culture, pollen culture, etc.. CO 3 - To identification of phytoplanktons in water bodies. CO 4 - To evaluate the metabolic reactions in plants. CO 5 - To report on common environmental problems, their consequences and possible solutions.
74	PB20S2	Self Learning Course - Biology for competitive exam – II	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To analyze complex problems, think independently, formulate and perform quality research. PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 5 - To integrate the knowledge of botany for global sustainable development.	CO 1 - To analyze the relationship between different ecological groups. CO 2 - To understand the importance of biotechnology and in various fields. CO 3 - To evaluate the origin and development of different meristems. CO 4 - To apply the conceptual knowledge to operate biotechnological equipments. CO 5 - To formulate and perform statistical problems.
<b>2022-2023</b>									
75	BC2011	Major Core I - Algae, Fungi and Lichens	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To face challenging competitive examinations that offer rewarding careers. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 5 - To seek entrepreneurship through skill based, value added and related courses.	CO 1 - To increase the awareness and appreciation of human friendly algae and their economic importance. CO 2 - To develop an understanding of microbes and fungi and appreciate their adaptive strategies. CO 3 - To develop critical understanding on morphology, anatomy and reproduction of Bryophytes, Pteridophytes and Gymnosperms. CO 4 - To compare the structure and function of cells and explain the development of cells. CO 5 - To understand the core concepts and fundamentals of plant biotechnology and genetic engineering.
76	BA2011	Allied I - Chemistry of Life	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To face challenging competitive examinations that offer rewarding careers. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To learn the structure, chemistry and functions of cellular organelles and non-living inclusions. CO 2 - To understand the structure, properties and fundamentals of biomolecules. CO 3 - To identify the characteristics and stages of mitosis, meiosis and cell cycle. CO 4 - To compare the beneficial effects of vitamin and mineral supplements in the diet. CO 5 - To learn the technique of Cell biology.
77	BNM201	Non Major Elective NME I - Gardening and Floriculture (NMEC)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 5 - To seek entrepreneurship through skill based, value added and related courses.	CO 1 - To understand the importance of nursery management and gardening. CO 2 - To compare the different methods of vegetative propagation in order to propagate ornamental and commercial flowers. CO 3 - To analyze the different methods of weed control and harvest treatments of horticultural crops. CO 4 - To design methods to grow a variety of garden plants in a diverse set of environment to become an entrepreneur.
78	BC2021	Major Core II - Plant Anatomy and Developmental Botany	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To recall the structure and functions of meristem, simple and complex tissues. CO 2 - To differentiate primary and secondary structures. CO 3 - To examine the nodal anatomy types. CO 4 - To interpret the different types of endosperms. CO 5 - To learn about double fertilization and their significance. CO 6 - To understand the basic knowledge of apomixis and polyembryony in the field of crop improvement.
79	BC20P1	Practical I -Algae, Fungi Lichens and Plant Anatomy and Developmental Botany	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To observe and identify different types of tissues and stomata. CO 2 - To prepare plant material for microscopic observation. CO 3 - To draw appropriate anatomical diagrams from the sectioned plant material using microscope. CO 4 - To differentiate and draw diagrams of nodes. CO 5 - To observe and identify the slides of different stages of microsporogenesis. CO 6 - To dissect and display the different stages of Tridax embryo.

80	BA2021	Allied I - Theory :- Taxonomy of Angiosperms and Herbal Technology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 2 - To communicate appropriately and effectively in science and also interact productively with people from diverse background.	CO 1 - To understand the basic knowledge of taxonomy by learning selected families of angiosperms. CO 2 - To understand the characters of the families according to Bentham & Hooker's system of Classification. CO 3 - To improve the awareness and appreciation of traditional medicinal practices. CO 4 - To apply the basic medicinal plants and its utilization. CO 5 - To create new strategies to enhance growth of medicinal herbs considering the practical issues pertinent to India. CO 6 - To evaluate the drug adulteration through the biological testing.
81	BA20P1	Allied Practical I - Chemistry of Life and Taxonomy of Angiosperms and Herbal Technology		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To dissect and display the floral parts of the families studied and draw floral parts and write floral formula. CO 2 - To assign the plant provided to the respective families. CO 3 - To know the relevance of herbal drugs in Indian system of medicine. CO 4 - To analyze the phytochemicals present in plant parts.
82	BNM202	Non Major Elective NME II - Biofertilizers, Biofuels and Biopesticides (NMEC)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To design novel mechanisms for the sustainable utilization of natural resources. CO 2 - To understand the role of microbes in bio - composting. CO 3 - To utilize the technique studied for biofuel production using suitable production. CO 4 - To learn different skills in bioproduct processing to become an entrepreneur. CO 5 - To know the efficacy of biocontrol mechanism over chemical application.
83	BC2031	Major Core III - Archegoniate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To describe the general characters of early land plants. CO 2 - To interpret the ecological and economic importance of archegoniate. CO 3 - To describe the external, internal and reproduction of archegoniate. CO 4 - To differentiate life cycle patterns of archegoniate. CO 5 - To classify Cryptogams and comment on the stellar evolution in pteridophytes. CO 6 - To compare the fossil members of pteridophytes and gymnosperms.
84	BC2032	Major Elective -I (a) Herbal Botany	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 2 - To apply the contextual knowledge in Botany to improve the supply of medicines, food, fibers and other plant products to the society.	CO 1 - To develop skills to grow herbs and empower entrepreneurship. CO 2 - To compare the side effects of allopathic medicine with native medicine. CO 3 - To compare the different types of indigenous medicine. CO 4 - To incorporate the novel values of herbs as food supplement. CO 5 - To understand the chemical constituents of important medicinal herbs. CO 6 - To demonstrate the use of locally available medicinal plants.
85	BC2033	Major Elective - I (b) Nursery and Gardening	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To incorporate lab to land programme by raising home garden and nurseries. CO 2 - To evaluate seed dormancy. CO 3 - To practice the different techniques in propagating horticultural plants. CO 4 - To explain the needed fertilizers in soil management. CO 5 - To understand the external factors necessary for plant growth. CO 6 - To explain the cultivation of different vegetable.
86	BC2034	Major Elective - I (c) Agricultural Botany	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To understand form, function and process within the plant. CO 2 - To analyse seed technology. CO 3 - To understand the physiological process within the plants in order to appreciate the diversity in plants and crops. CO 4 - To choose crops for different environments. CO 5 - To identify the factors affecting the crops. CO 6 - To develop skills by cultivating cereals and pulse.
87	BA2031	Allied II - Theory : Plant Diversity - I (Algae, Fungi, Bryophyta and Pteridophyta)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To recall the main features of angiosperms. CO 2 - To understand the respiratory processes carried out by plants. CO 3 - To apply their physical and biochemical knowledge to evaluate the processes involved in photosynthesis. CO 4 - To analyze the various processes involving in water uptake and transport in plants. CO 5 - To classify the different plants by the natural, artificial and phylogenetic classification. CO 6 - To interpret the role of growth hormones in plants.

88	BC20S1	SLC : Plant Resource Utilization	<input checked="" type="checkbox"/>				PO 1 - To obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 5 - To enhance capacity to think critically; ability to design and execute experiments independently and/or team under multidisciplinary settings.	CO 1 - To explain about bio-aesthetic planning and conceptualize flower arrangement. CO 2 - To apply techniques for design various types of gardens according to the culture and art of bonsai.
89	BC2041	Major Core IV - Plant Ecology and Phytogeography	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To recall the main features of angiosperms. CO 2 - To understand the respiratory processes carried out by plants. CO 3 - To apply their physical and biochemical knowledge to evaluate the processes involved in photosynthesis. CO 4 - To analyze the various processes involving in water uptake and transport in plants. CO 5 - To classify the different plants by the natural, artificial and phylogenetic classification. CO 6 - To interpret the role of growth hormones in plants.
90	BC2042	Major Elective - II (a) Biological Resources	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 5 - To seek entrepreneurship through skill based, value added and related courses.	CO 1 - To realise the vast expansion of biomass systems, both for "green energy" and for other renewable resources. CO 2 - To understand the nutritive value of Single Cell Protein and learnt the techniques of producing SCP from microorganisms. CO 3 - To recognize the need to protect and conserve Mother Nature. CO 4 - To find ways to have sustainable management of natural resources. CO 5 - To gain awareness of career options in the biological sciences.
91	BC2043	Elective - II (b) Food Science	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 2 - To apply the contextual knowledge in Botany to improve the supply of medicines, food, fibers and other plant products to the society.	CO 1 - To list the different constituents of food, methods of cooking and preservation. CO 2 - To demonstrate the side effects of food additives. CO 3 - To prepare value - added products of milk and vegetables. CO 4 - To explain the industrial production of beer, ethyl alcohol, vinegar and amylase. CO 5 - To design balanced diet. CO 6 - To test for detection of food adulterants and colourants.
92	BC2044	Elective – II (c) Biodiversity and Human Welfare	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 7 - To utilize the scientific explanation for the unity and diversity of life on earth.	CO 1 - To record the biodiversity taxa at different region. CO 2 - To assemble with any biodiversity management organizations at national or international level. CO 3 - To organize biodiversity awareness programmes. CO 4 - To apply the knowledge on conservation in day to day life. CO 5 - To assess the value of biodiversity through valid methodologies. CO 6 - To categorize the hot spots of biodiversity in national level.
93	BA2041	Allied II - Theory : Plant Diversity - II (Gymnosperms, Angiosperms and Plant Physiology)	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 2 - To apply the contextual knowledge in Botany to improve the supply of medicines, food, fibers and other plant products to the society.	CO 1 - To recognize the feature of plant anatomy: at the cell, tissue and organ level. CO 2 - To differentiate Prokaryotes from Eukaryotes. CO 3 - To know the complexity of xylem and phloem. CO 4 - To compare and contrast the organization of mitotic and meiotic cell division in plant and to learn about cell cycle. CO 5 - To compare the structure and functions of living and non - living inclusions in plants. CO 6 - To understand about the difference between the primary and secondary structures of plant.
94	BC20P2	Major Practical Paper - II Archegoniate & Plant Ecology and Phytogeography	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To identify the archegoniate from their morphological features. CO 2 - To examine the internal anatomy of few bryophytes, pteridophytes and gymnosperms. CO 3 - To prepare plant material for microscopic observation. CO 4 - To gain knowledge on fossil plants. CO 5 - To identify the archegoniate plants through field visit.
95	BA20P2	Allied II - Practical : Plant Diversity I & II and Plant Physiology	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To record the locally available Hydrophytes, Xerophytes and Halophytes. CO 2 - To construct a quadrat for vegetative analysis. CO 3 - To demonstrate the measurement of soil permeability. CO 4 - To practice the preparation of plant material for microscopic observation. CO 5 - To distinguish the phytogeography models. CO 6 - To develop practical skills to visit field for individual/group work.

96	BC20S2	SLC : Algal Biotechnology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To dissect the floral parts of the prescribed families and explain with appropriate diagrams. CO 2 - To identify electron micrographs of the cell organelles and tissues. CO 3 - To draw the anatomical structures of plant parts. CO 4 - To detect the tissues and stomatal types. CO 5 - To set up the experiments to show physiological process. CO 6 - To examine the non living inclusions.
97	BC20S1	Major Core V - Taxonomy of Angiosperms and Economic Botany	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany . PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To relate the modifications in plant parts. CO 2 - To differentiate the artificial, natural and phylogenetic classification and learn about ICN rules. CO 3 - To evaluate the taxonomists of India. CO 4 - To recall the characters of some important families. CO 5 - To understand the economically important products of plants and their use at various levels. CO 6 - To construct digital herbarium and learn about Herbarium techniques.
98	BC20S2	Major Core VI - Biochemistry and Biophysics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.	PSO 1 - To develop a strong and competent knowledge in Botany . PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To apply the usage of PH and buffers in biological experiments. CO 2 - To understand the importance of Bio-molecules. CO 3 - To describe its biological roles and significance of lipids. CO 4 - To analyze enzyme activity. CO 5 - To demonstrate thermodynamic principles in biological energy conversion.
99	BC20S3	Major Core VII - Microbiology and Plant Pathology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To develop a strong and competent knowledge in Botany . PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To get an insight on the structure and reproduction of bacteria and viruses. CO 2 - To explore the role and relevance of bacteria and viruses in the field of microbiology. CO 3 - To learn the sterilization techniques and preparation of culture media. CO 4 - To become an expert in operating microbiological instruments thereby undertaking careers in that field. CO 5 - To understand the economic and pathological importance of bacteria, viruses and fungi.
100	BC20PR	Major - Elective III - Research Project	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries. PO 5 - To utilize the obtained scientific knowledge to create eco- friendly environment..	PSO 1 - To develop a strong and competent knowledge in Botany . PSO 6 - To choose and apply appropriate tools, techniques, resources, etc. to perform various experiments in Botany.	CO 1 - To explore new areas of research in Botany and allied field of life science. CO 2 - To analyze are research problem and construct tools for data collection. CO 3 - To write research reports and present results in the scientific community. CO 4 - To develop skills to serve in Life science related industries and agencies. CO 5 - To develop skills to publish articles in reputed journals.
101	BC2061	Major Core VIII - Genetics, Biostatistics and Bioinformatics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries. PO 5 - To utilize the obtained scientific knowledge to create eco- friendly environment..	PSO 1 - To develop a strong and competent knowledge in Botany . PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To understand Mendelian principle and predict genetic inheritance patterns. CO 2 - To analyze the facts of non-Mendelian inheritance and have conceptual knowledge on alleles and their linkage. CO 3 - To examine the various stages of cell division and also a clear knowledge on DNA structure. CO 4 - To generate biological interpretations and conclusions from data of scientific research. CO 5 - To develop skills to become employable as professionals in biochemical industries.
102	BC2062	Major Core IX - Biotechnology and Molecular Biology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 5 - To utilize the obtained scientific knowledge to create eco- friendly environment.. PO 6 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To develop a strong and competent knowledge in Botany . PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To acquaint the core concepts and fundamentals of plant biotechnology. CO 2 - To develop competency on different types of plant tissue culture. CO 3 - To understand the mechanisms of genetic information. CO 4 - To get an insight of chromosome abnormalities and related human syndromes. CO 5 - To develop skills to become employable as professionals in Biotechnology Industries.
103	BC2063	Major Core X - Plant Physiology and Metabolism	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 6 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To develop a strong and competent knowledge in Botany . PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To understand water relation of plants with respect to various physiological processes. CO 2 - To explained efficiency symptoms of macro and micronutrients in plants. CO 3 - To relate complementary metabolic pathways such as photosynthesis and respiration in energy acquisition. CO 4 - To analyse nitrogen metabolism and its significance. CO 5 - To assess dormancy and germination in plants.
104	BC2064	Major - Elective IV (a) Marine Botany	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 6 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To develop a strong and competent knowledge in Botany . PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To describe the types of marine habitat and their relationship with environment. CO 2 - To compare the threats and conservation of seaweeds and sea grasses. CO 3 - To evaluate how natural events and human activities affect coastal habitats. CO 4 - To create a broad knowledge about the marine products and their economic value. CO 5 - To describe the role of mangroves in conservation of marine flora and fauna.

105	BC2065	Major - Elective IV (b) Organic Farming	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 6 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To develop a strong and competent knowledge in Botany . PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To understand the concept of organic farming and its importance. CO 2 - To apply the knowledge of organic nutrients and organic pest management in farming. CO 3 - To demonstrate the use of biocontrol agents, botanicals and other plant growthpromoting preparations in organic farming. CO 4 - To learn the techniques of different concepts of composting methods. CO 5 - To empower the employment opportunity of rural youth at village level in organic market as organic growers, stakeholders, and entrepreneurs.	
106	BC2066	Major- Elective IV (c) Ecotourism	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 6 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To develop a strong and competent knowledge in Botany . PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To recognize the values of natural heritage. CO 2 - To create environmental and cultural awareness to develop sustainable eco-tourism spots. CO 3 - To understand the impact of ecotourism on economy, socio- economic and environment of a country. CO 4 - To appreciate and admire the varieties of tourist centres. CO 5 - To evaluate the role of local community in ecotourism.	
107	BC20P3	Major Practical III - Taxonomy and Economic Botany & Biochemistry and Biophysics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 6 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To develop a strong and competent knowledge in Botany . PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To understand and identify the locally available common plants. CO 2 - To identify the family and describe the plant parts and floral parts. CO 3 - To record the economically important products from the prescribed families in the syllabus. CO 4 - To prepare buffer solution for biological and biotechnological experiments. CO 5 - To estimate and compare the biomolecules quantitatively. CO 6 - To identify spotters (i.e., Photos/Models/Instruments) related to biochemistry and biophysics. CO 7 - To do qualitative analysis of glucose, starch, protein and lipids	
108	BC20P4	Major Practical IV - Genetics, Biostatistics and Bioinformatics & Biotechnology and Molecular Biology	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 6 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To develop a strong and competent knowledge in Botany . PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To identify the different stages of mitosis from the root tip squash of Onion. CO 2 - To solve genetic problems related to monohybrid, dihybrid ratio and interaction of genes. CO 3 - To interpret experimental data using biostatistics. CO 4 - To identify spotters (Photos/Models). CO 5 - To be familiar with sterilization techniques. CO 6 - To demonstrate Preparation of MS medium. CO 7 - To analyse PCR Technique: Southern and Northern Blotting technique.	
109	BC20P5	Major Practical V - Microbiology and Plant Pathology & Plant Physiology and Metabolism	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 6 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To develop a strong and competent knowledge in Botany . PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To apply sterilization technique and prepare sterile bacterial culture media. CO 2 - To detect coliform bacteria in water samples. CO 3 - To identify the spotters. CO 4 - To know the importance of pasteurization through field visit. CO 5 - To demonstrate and interpret the results to physiology experiments. CO 6 - To able to analyse the relationship between absorption and transpiration.	
110	SEC203	Skill Enhancement Course (SEC) - Global Environmental Issues	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe. PO 6 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To develop a strong and competent knowledge in Botany . PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To analyse the causes and effects of pollution on various spheres of earth. CO 2 - To understand the causes of climate change and its effect on environment. CO 3 - To examine the anthropogenic activities in soil desertification. CO 4 - To be aware of the importance of wet lands. CO 5 - To explain the reasons for biodiversity loss.	
111	PB2011	Core I - Plant Diversity I – Algae, Fungi, Lichens and Bryophytes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To analyse complex problems, think independently, formulate and perform quality research. PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 2 - To evaluate ecological interconnectedness of life on earth.	CO 1 - To remember the basic concepts of plant diversity. CO 2 - To understand the morphological diversity of thallophytes. CO 3 - To evaluate the life history of different thallophytic members. CO 4 - To analyze the thallophytes found in water bodies. CO 5 - To create a protocol to assess the role of thallophytes with industrial applications. CO 6 - To apply the knowledge attained from evolutionary aspects of plant diversity towards research.

112	PB2012	Core II – Microbiology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To analyse complex problems, think independently, formulate and perform quality research. PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To understand the basic concepts of microbiology and immunology. CO 2 - To remember the classification and nomenclature of microorganisms and plant diseases. CO 3 - To apply modern techniques to detect antigen, antibodies, pathogens and its controlling measures. CO 4 - To evaluate the role of antimicrobial drugs and its resistance. CO 5 - To analyze the microbes present in milk, water, soil and plants. CO 6 - To create a protocol for identification of gram positive and gram negative bacteria.
113	PB2013	Core III – Plant Anatomy & Embryology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To analyse complex problems, think independently, formulate and perform quality research. PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 2 - To evaluate ecological interconnectedness of life on earth.	CO 1 - To understand the characteristics of specialized cells and their components. CO 2 - To remember the knowledge of plant cells , tissues and functional theories. CO 3 - To apply the knowledge of anatomical studies in different field. CO 4 - To evaluate the nature and secret of seed development. CO 5 - To analyze the structural differences among different taxa of vascular plants.
114	PB2014	Elective I – (a) Marine Biology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To analyse complex problems, think independently, formulate and perform quality research. PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 3 - To experience in seeking external funds for their research from a diversity of resources.	CO 1 - To understand the basic characteristics and biological processes of marine habitat. CO 2 - To remember the diversity of marine habitat. CO 3 - To apply different techniques to identify bioactive compounds. CO 4 - To evaluate the inter-relationships of mangroves, sea grasses, corals and salt marsh plants. CO 5 - To analyze the different types of pollution in marine environment. CO 6 - To create a protocol for producing useful products by cultivating marine organisms.
115	PB2015	Elective I – (b) Organic Farming	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To analyse complex problems, think independently, formulate and perform quality research. PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 4 - To apply the acquired conceptual knowledge by connecting disciplinary and interdisciplinary aspects of Botany.	CO 1 - To understand the role of micro and macro nutrients in plant growth and development. CO 2 - To remember the principles of organic and ecological approaches in agriculture. CO 3 - To analyse the soil types, agricultural waste and nature of pests in fields apply different techniques to identify bioactive compounds. CO 4 - To create organic farming and gardening methods that sustain profitable production, and environmental health.
116	PB2021	Core IV – Plant Diversity II - Pteridophyta, Gymnosperms and Palaeobotany	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To analyse complex problems, think independently, formulate and perform quality research. PO 5 - To emerge as expressive, ethical and responsive citizens with proven expertise.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 2 - To evaluate ecological interconnectedness of life on earth.	CO 1 - To understand the life cycle and major evolutionary trends of non – flowering plants. CO 2 - To remember, recognize and identify the non – flowering plants. CO 3 - To analyze the inter - relationship between Pteridophytes and Gymnosperms. CO 4 - To evaluate and compare the evolution of gametophytes and sporophytes of Pteridophytes. CO 5 - To apply the knowledge attained from evolutionary aspects of plant diversity towards research. CO 6 - To create methods to extract, prepare, preserve and catalogue fossils.
117	PB2022	Core V – Research Methodology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To analyse complex problems, think independently, formulate and perform quality research. PO 5 - To emerge as expressive, ethical and responsive citizens with proven expertise.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 4 - To apply the acquired conceptual knowledge by connecting disciplinary and interdisciplinary aspects of Botany.	CO 1 - To remember the basic concepts of research and its methodologies. CO 2 - To understand the principles and working mechanisms of various instruments. CO 3 - To apply computer skills in research. CO 4 - To analyze the biological data in solving biological problems. CO 5 - To create skills in qualitative and quantitative data analysis and presentation.
118	PB2023	Core VI – Cell Biology and Biomolecules	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To carry out internship programmes and research projects to develop scientific skills and innovative ideas. PO 5 - To emerge as expressive, ethical and responsive citizens with proven expertise.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 5 - To integrate the knowledge of botany for global sustainable development.	CO 1 - To understand the diversity of cells and the role of compartmentalization and cell signaling. CO 2 - To remember the role of inorganic and organic molecules to life. CO 4 - To understand the structure and functions of different biomolecules. CO 5 - To apply the basic principles and concepts of enzyme regulation. CO 6 - To analyze the modern techniques in cellular biology.
119	PB2024	Elective II – (a) Herbalism	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 5 - To emerge as expressive, ethical and responsive citizens with proven expertise. PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 4 - To apply the acquired conceptual knowledge by connecting disciplinary and interdisciplinary aspects of Botany.	CO 1 - To remember the traditional systems of medicines in terms of Siddha, Ayurvedha, and Unani. CO 2 - To understand the conservation of medicinal plants –in situ and ex situ. CO 3 - To apply the methods that extract oil from Eucalyptus, Cymbopogon, Rose, and Santalum. CO 4 - To create the protocol for extracting withanolides, hyoscyamine and vinblastine. CO 5 - To analyze crude drugs both qualitatively and quantitatively.

120	PB2025	Elective II – (b) Evolutionary Biology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 5 - To emerge as expressive, ethical and responsive citizens with proven expertise. PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 4 - To apply the acquired conceptual knowledge by connecting disciplinary and interdisciplinary aspects of Botany.	CO 1 - To analyze the major genetic and ecological processes underlying evolution and selection. CO 2 - To remember the theory of evolution considering Darwinism and Modern Synthetic Theory. CO 3 - To understand the population genetic consequences of selection. CO 4 - To create evolutionary hypotheses for a wide variety of biological phenomena. CO 5 - To apply evolutionary principles in research.
121	PB20P1	Practical I - Plant Diversity I – Algae, Fungi, Lichens and Bryophytes, Microbiology and Plant Anatomy & Embryology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To analyse complex problems, think independently, formulate and perform quality research. PO 5 - To emerge as expressive, ethical and responsive citizens with proven expertise.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 4 - To apply the acquired conceptual knowledge by connecting disciplinary and interdisciplinary aspects of Botany.	CO 1 - To understand the thallophytes by micropreparation. CO 2 - To analyze the cryptogams on the basis of morphological characters. CO 3 - To evaluate the methodology to differentiate gram positive and gram negative bacteria. CO 5 - To apply the knowledge of anatomical studies in research. CO 6 - To evaluate the nature and defects of wood.
122	PB20P2	Practical II - Plant Diversity II- Pteridophyta, Gymnosperms and Palaeobotany, Research Methodology and Cell Biology and Biomolecules	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To analyse complex problems, think independently, formulate and perform quality research. PO 5 - To emerge as expressive, ethical and responsive citizens with proven expertise.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 2 - To evaluate ecological interconnectedness of life on earth.	CO 1 - To understand vascular cryptogams by micropreparation. CO 2 - To analyse Pteridophytes and Gymnosperms based on their anatomical features. CO 4 - To evaluate macromolecules in biological samples. CO 5 - To analyze different biological data using biostatistics.
123	PB2031	Core VII - Taxonomy of Angiosperms	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To become successful professionals and entrepreneurs. PO 5 - To emerge as expressive, ethical and responsive citizens with proven expertise.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 5 - To integrate the knowledge of botany for global sustainable development.	CO 1 - To differentiate between natural and artificial system of classification. CO 2 - To apply sketches to identify the flora. CO 3 - To collect and prepare herbaria for future use. CO 4 - To record the rules and regulations framed by ICBN. CO 5 - To interpreting biological knowledge in comparing and ranking plants. CO 6 - To evaluation of plants by using dichotomous keys.
124	PB2032	Core VIII – Genetics and Molecular Biology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To carry out internship programmes and research projects to develop scientific skills and innovative ideas. PO 5 - To emerge as expressive, ethical and responsive citizens with proven expertise.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 2 - To evaluate ecological interconnectedness of life on earth.	CO 1 - To understand the organization of cell organelles and genes. CO 2 - To differentiate between mitochondrial DNA and chloroplast DNA. CO 3 - To evaluate the dissociation and re-association kinetics of DNA. CO 4 - To construct different types of plasmids and operons. CO 5 - To analyze Transcription and Translation of Prokaryotes and Eukaryotes. CO 6 - To evaluate the problems in genetics.
125	PB2033	Elective III – (a) Horticulture	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 5 - To emerge as expressive, ethical and responsive citizens with proven expertise. PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 5 - To integrate the knowledge of botany for global sustainable development.	CO 1 - To categorize the propagation of horticultural crops. CO 2 - To describe orchard cultivation. CO 3 - To design a kitchen garden in growing vegetables and greens. CO 4 - To state the importance and principles of lawns, topiary and pergolas. CO 5 - To understand the methods involved in hybridization. CO 6 - To evaluate the molecular approaches for crop improvement.
126	PB2034	Elective III – (b) Forestry	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 5 - To emerge as expressive, ethical and responsive citizens with proven expertise. PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 5 - To integrate the knowledge of botany for global sustainable development.	CO 1 - To categorize the types of forests in Tamilnadu. CO 2 - To identify the reasons for degradation of forest. CO 3 - To summarize the methods in managing and conserving the forest. CO 4 - To understand the objectives, advantages and disadvantages of agroforestry. CO 5 - To determine the role of botanical gardens, zoos, national parks, and sanctuaries. CO 6 - To evaluate the utilization of forest.
127	PB20PR	Research Project	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 5 - To emerge as expressive, ethical and responsive citizens with proven expertise. PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 4 - To apply the acquired conceptual knowledge by connecting disciplinary and interdisciplinary aspects of Botany.	CO 1 - To explore new areas of research in Botany and allied field of life science. CO 2 - To analyze a research problem and construct tools for data collection. CO 3 - To write research reports and present results in the scientific community. CO 4 - To develop skills to serve in Life science related industries and agencies. CO 5 - To develop skills to publish articles in reputed journals.
128	PB20S1	Self Learning Course - Biology for competitive exam – I	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		PO 3 - To become successful professionals and entrepreneurs. PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 5 - To integrate the knowledge of botany for global sustainable development.	CO 1 - To understand the organization of cell organelles. CO 2 - To know the molecular and metabolic mechanisms of plants. CO 3 - To evaluate gene interactions. CO 4 - To analyze transcription and translation of prokaryotes and eukaryotes. CO 5 - To classify the plant diseases.



129	PB2041	Core IX - Plant Physiology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To become successful professionals and entrepreneurs. PO 5 - To emerge as expressive, ethical and responsive citizens with proven expertise.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 4 - To apply the acquired conceptual knowledge by connecting disciplinary and interdisciplinary aspects of Botany.	CO 1 - To relate the physical and chemical process occurring in plants. CO 2 - To understand the molecular and metabolic mechanisms of plants. CO 3 - To generalize a minor research using their theory knowledge. CO 4 - To examine, compare and conclude the stressed and stress free plants. CO 5 - To measure the biological mechanisms that takes place inside the plants. CO 6 - To design a protocol for plant regeneration under aseptic condition.
130	PB2042	Core X – Plant Ecology and Phytogeography	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	PO 5 - To emerge as expressive, ethical and responsive citizens with proven expertise. PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 5 - To integrate the knowledge of botany for global sustainable development.	CO 1 - To understand the scope and importance of ecosystem. CO 2 - To distinguish the difference between hydrosere and xerosere. CO 3 - To list out the various food chains in ecosystem. CO 4 - To implement the mode of studying vegetation. CO 5 - To understand the importance of conservation strategies.
131	PB2043	Core XI – Biotechnology & Bioinformatics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe. PO 5 - To emerge as expressive, ethical and responsive citizens with proven expertise.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 3 - To experience in seeking external funds for their research from a diversity of resources.	CO 1 - To understand the importance of biotechnology and design a plant tissue culture laboratory. CO 2 - To differentiate batch, continuous and fed batch culture. CO 3 - To evaluate the pros and cons of Transgenic plants. CO 4 - To recall the different aspects of pharmaceuticals. CO 5 - To apply different databases in biological sciences.
132	PB2044	Elective IV – (a) Phytochemistry and Pharmacognosy	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	PO 1 - To carry out internship programmes and research projects to develop scientific skills and innovative ideas. PO 5 - To emerge as expressive, ethical and responsive citizens with proven expertise.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 3 - To experience in seeking external funds for their research from a diversity of resources.	CO 1 - To classify and understand secondary metabolites in plants. CO 2 - To remember the traditional systems of medicines in terms of Siddha, Ayurvedha, and Unani. CO 3 - To apply phytochemistry in different industries. CO 4 - To create the protocol for healing procedures in ethnobotany. CO 5 - To analyze crude drugs both qualitatively and quantitatively.
133	PB2045	Elective IV – (b) Entrepreneurial Botany	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To become successful professionals and entrepreneurs. PO 5 - To emerge as expressive, ethical and responsive citizens with proven expertise.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 3 - To experience in seeking external funds for their research from a diversity of resources.	CO 1 - To create protocol for the production of Mushroom. CO 2 - To understand the nutritive value of SCP. CO 3 - To justify the impact of organic fertilizers over synthetic fertilizers. CO 4 - To summarize the aesthetic sense of gardening. CO 5 - To know the different funding agencies.
134	PB20P3	Practical III - Taxonomy of Angiosperms & Genetics and Molecular Biology.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To analyse complex problems, think independently, formulate and perform quality research. PO 5 - To emerge as expressive, ethical and responsive citizens with proven expertise.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 3 - To experience in seeking external funds for their research from a diversity of resources.	CO 1 - To isolate the DNA from plant materials. CO 2 - To separation of biomolecules using spectrophotometry. CO 3 - To analyse the floral parts and relate to its corresponding family. CO 4 - To solve genetics related problems.
135	PB20P4	Practical IV - Plant Physiology, Plant Ecology & Phytogeography and Biotechnology & Bioinformatics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	PO 2 - To analyse complex problems, think independently, formulate and perform quality research. PO 5 - To emerge as expressive, ethical and responsive citizens with proven expertise.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 5 - To integrate the knowledge of botany for global sustainable development.	CO 1 - To analyze DO, BOD and COD of water. CO 2 - To prepare tissue culture media, initiate callus culture, anther culture, pollen culture, etc . . CO 3 - To identification of phytoplanktons in water bodies. CO 4 - To evaluate the metabolic reactions in plants. CO 5 - To report on common environmental problems, their consequences and possible solutions.
136	PB20S2	Self Learning Course - Biology for competitive exam – II	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	PO 1 - To integrate the knowledge of botany for global sustainable development. PO 5 - To emerge as expressive, ethical and responsive citizens with proven expertise.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 3 - To experience in seeking external funds for their research from a diversity of resources.	CO 1 - To analyze the relationship between different ecological groups. CO 2 - To understand the importance of biotechnology and in various fields. CO 3 - To evaluate the origin and development of different meristems. CO 4 - To apply the conceptual knowledge to operate biotechnological equipments. CO 5 - To formulate and perform statistical problems.
<b>2021-2022</b>									
137	BC2011	Major Core I - Algae, Fungi and Lichens	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 6 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To increase the awareness and appreciation of human friendly algae and their economic importance. CO 2 - To develop an understanding of microbes and fungi and appreciate their adaptive strategies. CO 3 - To develop critical understanding on morphology, anatomy and reproduction of Bryophytes, Pteridophytes and Gymnosperms. CO 4 - To compare the structure and function of cells and explain the development of cells. CO 5 - To understand the core concepts and fundamentals of plant biotechnology and genetic engineering.

138	BA2011	Allied I - Chemistry of Life	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 6 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To develop a strong and competent knowledge in Botany.. PSO 2 - To communicate appropriately and effectively in science and also interact productively with people from diverse background.	CO 1 - To learn the structure, chemistry and functions of cellular organelles and non-living inclusions. CO 2 - To understand the structure, properties and fundamentals of biomolecules. CO 3 - To identify the characteristics and stages of mitosis, meiosis and cell cycle. CO 4 - To compare the beneficial effects of vitamin and mineral supplements in the diet. CO 5 - To learn the technique of cell biology.
139	BNM201	Non Major Elective NME I - Gardening and Floriculture (NMEC)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To face challenging competitive examinations that offer rewarding careers. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To understand the importance of nursery management and gardening. CO 2 - To compare the different methods of vegetative propagation in order to propagate ornamental and commercial flowers. CO 3 - To analyze the different methods of weed control and harvest treatments of horticultural crops. CO 4 - To design methods to grow a variety of garden plants in a diverse set of environment to become an entrepreneur.
140	BC2021	Major Core II - Plant Anatomy and Developmental Botany	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 4 - To create green environment to protect nature for future sustenance	CO 1 - To recall the structure and functions of meristem, simple and complex tissues. CO 2 - To differentiate primary and secondary structures. CO 3 - To examine the nodal anatomy types. CO 4 - To interpret the different types of endosperms. CO 5 - To learn about double fertilization and their significance. CO 6 - To understand the basic knowledge of apomixis and polyembryony in the field of crop improvement.
141	BC20P1	Practical I -Algae, Fungi ,Lichens and Plant Anatomy and Developmental Botany	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To observe and identify different types of tissues and stomata. CO 2 - To prepare plant material for microscopic observation. CO 3 - To draw appropriate anatomical diagrams from the sectioned plant material using microscope. CO 4 - To differentiate and draw diagrams of nodes. CO 5 - To observe and identify the slides of different stages of microsporogenesis. CO 6 - To dissect and display the different stages of Tridax embryo.
142	BA2021	Allied I - Theory : - Taxonomy of Angiosperms and Herbal Technology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 2 - To communicate appropriately and effectively in science and also interact productively with people from diverse background.	CO 1 - To understand the basic knowledge of taxonomy by learning selected families of angiosperms. CO 2 - To understand the characters of the families according to Bentham & Hooker's system of Classification. CO 3 - To improve the awareness and appreciation of traditional medicinal practices. CO 4 - To apply the basic medicinal plants and its utilization. CO 5 - To create new strategies to enhance growth of medicinal herbs considering the practical issues pertinent to India. CO 6 - To evaluate the drug adulteration through the biological testing.
143	BA20P1	Allied Practical I - Chemistry of Life and Taxonomy of Angiosperms and Herbal Technology	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To dissect and display the floral parts of the families studied and draw floral parts and write floral formula. CO 2 - To assign the plant provided to the respective families. CO 3 - To know the relevance of herbal drugs in Indian system of medicine. CO 4 - To analyze the phytochemicals present in plant parts.
144	BNM202	Non Major Elective NME II - Biofertilizers, Biofuels and Biopesticides (NMEC)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To design novel mechanisms for the sustainable utilization of natural resources. CO 2 - To understand the role of microbes in bio - composting. CO 3 - To utilize the technique studied for biofuel production using suitable production. CO 4 - To learn different skills in bioproduct processing to become an entrepreneur. CO 5 - To know the efficacy of biocontrol mechanism over chemical application.
145	BC2031	Major Core III - Archegoniate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To describe the general characters of early land plants. CO 2 - To interpret the ecological and economic importance of archegoniate. CO 3 - To describe the external, internal and reproduction of archegoniate. CO 4 - To differentiate life cycle patterns of archegoniate. CO 5 - To classify Cryptogams and comment on the stelar evolution in pteridophytes. CO 6 - To compare the fossil members of pteridophytes and gymnosperms.

146	BC2032	Major Elective -I (a) Herbal Botany	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 2 - To apply the contextual knowledge in Botany to improve the supply of medicines, food, fibers and other plant products to the society.	CO 1 - To develop skills to grow herbs and empower entrepreneurship. CO 2 - To compare the side effects of allopathic medicine with native medicine. CO 3 - To compare the different types of indigenous medicine. CO 4 - To incorporate the novel values of herbs as food supplement. CO 5 - To understand the chemical constituents of important medicinal herbs. CO 6 - To demonstrate the use of locally available medicinal plants.
147	BC2033	Major Elective - I (b) Nursery and Gardening	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To incorporate lab to land programme by raising home garden and nurseries. CO 2 - To evaluate seed dormancy. CO 3 - To practice the different techniques in propagating horticultural plants. CO 4 - To explain the needed fertilizers in soil management. CO 5 - To understand the external factors necessary for plant growth. CO 6 - To explain the cultivation of different vegetable.
148	BC2034	Major Elective - I (c) Agricultural Botany	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To understand form, function and process within the plant. CO 2 - To analyse seed technology. CO 3 - To understand the physiological process within the plants in order to appreciate the diversity in plants and crops. CO 4 - To choose crops for different environments. CO 5 - To identify the factors affecting the crops. CO 6 - To develop skills by cultivating cereals and pulse.
149	BA2031	Allied II - Theory : Plant Diversity - I (Algae, Fungi, Bryophyta and Pteridophyta)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 2 - To create innovative ideas through laboratory experiments.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To recall the main features of angiosperms. CO 2 - To understand the respiratory processes carried out by plants. CO 3 - To apply their physical and biochemical knowledge to evaluate the processes involved in photosynthesis. CO 4 - To analyze the various processes involving in water uptake and transport in plants. CO 5 - To classify the different plants by the natural, artificial and phylogenetic classification. CO 6 - To interpret the role of growth hormones in plants.
150	BC20S1	Self Learning Course : Plant Resource Utilization	<input checked="" type="checkbox"/>				PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To explain about bio-aesthetic planning and conceptualize flower arrangement. CO 3 - To apply techniques for design various types of gardens according to the culture and art of bonsai.
151	BC2041	Major Core IV - Plant Ecology and Phytogeography	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 2 - To create innovative ideas through laboratory experiments.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To recall the main features of angiosperms. CO 2 - To understand the respiratory processes carried out by plants. CO 3 - To apply their physical and biochemical knowledge to evaluate the processes involved in photosynthesis. CO 4 - To analyze the various processes involving in water uptake and transport in plants. CO 5 - To classify the different plants by the natural, artificial and phylogenetic classification. CO 6 - To interpret the role of growth hormones in plants.
152	BC2042	Major Elective - II (a) Biological Resources	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 5 - To seek entrepreneurship through skill based, value added and related courses.	CO 1 - To realise the vast expansion of biomass systems, both for "green energy" and for other renewable resources. CO 2 - To understand the nutritive value of Single Cell Protein and learnt the techniques of producing SCP from microorganisms. CO 3 - To recognize the need to protect and conserve Mother Nature. CO 4 - To find ways to have sustainable management of natural resources. CO 5 - To gain awareness of career options in the biological sciences.
153	BC2043	Elective - II (b) Food Science	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 2 - To apply the contextual knowledge in Botany to improve the supply of medicines, food, fibers and other plant products to the society.	CO 1 - To list the different constitutes of food, methods of cooking and preservation. CO 2 - To demonstrate the side effects of food additives. CO 3 - To prepare value - added products of milk and vegetables. CO 4 - To explain the industrial production of beer, ethyl alcohol, vinegar and amylase. CO 5 - To design balanced diet. CO 6 - To test for detection of food adulterants and colourants.

154	BC2044	Elective – II (c) Biodiversity and Human Welfare	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.</p>	<p>PSO 1 - To develop a strong and competent knowledge in Botany.</p> <p>PSO 7 - To utilize the scientific explanation for the unity and diversity of life on earth.</p>	<p>CO 1 - To record the biodiversity taxa at different region.</p> <p>CO 2 - To assemble with any biodiversity management organizations at national or international level.</p> <p>CO 3 - To organize biodiversity awareness programmes.</p> <p>CO 4 - To apply the knowledge on conservation in day to day life.</p> <p>CO 5 - To assess the value of biodiversity through valid methodologies.</p> <p>CO 6 - To categorize the hot spots of biodiversity in national level.</p>
155	BA2041	Allied II - Theory : Plant Diversity - II (Gymnosperms, Angiosperms and Plant Physiology)	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.</p>	<p>PSO 1 - To develop a strong and competent knowledge in Botany.</p> <p>PSO 2 - To apply the contextual knowledge in Botany to improve the supply of medicines, food, fibers and other plant products to the society.</p>	<p>CO 1 - To recognize the feature of plant anatomy: at the cell, tissue and organ level.</p> <p>CO 2 - To differentiate Prokaryotes from Eukaryotes.</p> <p>CO 3 - To know the complexity of xylem and phloem.</p> <p>CO 4 - To compare and contrast the organization of mitotic and meiotic cell division in plant and to learn about cell cycle.</p> <p>CO 5 - To compare the structure and functions of living and non - living inclusions in plants.</p> <p>CO 6 - To understand about the difference between the primary and secondary structures of plant.</p>
156	BC20P2	Major Practical Paper - II Archegoniate & Plant Ecology and Phytogeography	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p> <p>PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.</p>	<p>PSO 1 - To develop a strong and competent knowledge in Botany.</p> <p>PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.</p>	<p>CO 1 - To identify the archegoniate from their morphological features.</p> <p>CO 2 - To examine the internal anatomy of few bryophytes, pteridophytes and gymnosperms.</p> <p>CO 3 - To prepare plant material for microscopic observation.</p> <p>CO 4 - To gain knowledge on fossil plants.</p> <p>CO 5 - To identify the archegoniate plants through field visit.</p>
157	BA20P2	Allied II - Practical : Plant Diversity I & II and Plant Physiology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.</p> <p>PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education. equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To develop a strong and competent knowledge in Botany.</p> <p>PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.</p>	<p>CO 1 - To record the locally available Hydrophytes, Xerophytes and Halophytes.</p> <p>CO 2 - To construct a quadrat for vegetative analysis.</p> <p>CO 3 - To demonstrate the measurement of soil permeability.</p> <p>CO 4 - To practice the preparation of plant material for microscopic observation.</p> <p>CO 5 - To distinguish the phytogeography models.</p> <p>CO 6 - To develop practical skills to visit field for individual/group work.</p>
158	BC20S2	Self Learning Course : Algal Biotechnology	<input checked="" type="checkbox"/>				<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.</p> <p>PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To develop a strong and competent knowledge in Botany.</p> <p>PSO 7 - To utilize the scientific explanation for the unity and diversity of life on earth.</p>	<p>CO 1 - To dissect the floral parts of the prescribed families and explain with appropriate diagrams.</p> <p>CO 2 - To identify electron micrographs of the cell organelles and tissues.</p> <p>CO 3 - To draw the anatomical structures of plant parts.</p> <p>CO 4 - To detect the tissues and stomatal types.</p> <p>CO 5 - To set up the experiments to show physiological process.</p> <p>CO 6 - To examine the non living inclusions.</p>

159	BC1751	Major Core V - Taxonomy and Economic Botany	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.</p> <p>PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To develop a strong and competent knowledge in Botany.</p> <p>PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.</p>	<p>CO 1 - To relate the modifications in plant parts.</p> <p>CO 2 - To differentiate the artificial, natural and phylogenetic classification and learn about ICN rules.</p> <p>CO 3 - To evaluate the taxonomists of India.</p> <p>CO 4 - To recall the characters of some important families.</p> <p>CO 5 - To understand the economic importance of plants and their use at various levels.</p> <p>CO 6 - To construct digital herbarium and learn about Herbarium techniques.</p>
160	BC1752	Major Core VI - Biochemistry and Biophysics	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p> <p>PO 6 - To impart communicative skills and ethical values.</p>	<p>PSO 1 - To develop a strong and competent knowledge in Botany.</p> <p>PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.</p>	<p>CO 1 - To identify the levels of structure in proteins and describe its biological roles.</p> <p>CO 2 - To understand the structure, properties and fundamentals of biomolecules.</p> <p>CO 3 - To demonstrate thermodynamic principles in biological energy conversion.</p> <p>CO 4 - To analyze enzyme activity.</p> <p>CO 5 - To compare the structure of saturated fatty acids with unsaturated fatty acids.</p> <p>CO 6 - To analyse the biological data and interpret data with the hypothesis.</p>
161	BC1753	Major Core VII - Microbiology and Plant Pathology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.</p> <p>PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To develop a strong and competent knowledge in Botany.</p> <p>PSO 7 - To utilize the scientific explanation for the unity and diversity of life on earth.</p>	<p>CO 1 - To be familiarize with basic information about microbiology and microbiologists.</p> <p>CO 2 - To explore the role and relevance of viruses and bacteria in the field of microbiology.</p> <p>CO 3 - To work safely, competently and effectively in the laboratory in a team.</p> <p>CO 4 - To undertake careers in microbiology through the hands - on training techniques they learnt.</p> <p>CO 5 - To recognize the signs and symptoms of diseases and the major issues that arise due to such infections.</p>
162	BC1754	Major - Elective III (a) Horticulture and Plant Breeding	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.</p> <p>PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To develop a strong and competent knowledge in Botany.</p> <p>PSO 7 - To utilize the scientific explanation for the unity and diversity of life on earth.</p>	<p>CO 1 - To understand the scope of horticulture.</p> <p>CO 2 - To develop creative skills for establishment of an orchard.</p> <p>CO 3 - To explain the propagation methods by seeds, cuttings, grafting, budding and layering.</p> <p>CO 4 - To apply the knowledge of horticultural techniques to develop ornamental gardens.</p> <p>CO 5 - To recall the special techniques in plant breeding.</p> <p>CO 6 - To analyze the employability skills in the field of horticulture.</p>
163	BC1755	Major - Elective III (b) Forestry	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p> <p>PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.</p>	<p>PSO 1 - To develop a strong and competent knowledge in Botany.</p> <p>PSO 7 - To utilize the scientific explanation for the unity and diversity of life on earth.</p>	<p>CO 1 - To list the different agroforestry technologies and identify ways to classify them into relevant groups.</p> <p>CO 2 - To review the types and distribution of forest with reference to India.</p> <p>CO 3 - To apply forest management principles and practice them in land management.</p> <p>CO 4 - To analyze recreational forestry including Botanical gardens, Zoos, National Parks and Sanctuaries in recreation/conservation of wildlife.</p> <p>CO 5 - To recognize the valuable forest products and the methods of conservation.</p> <p>CO 6 - To report the possible man - made calamities of the forest.</p>

164	BC1756	Major - Elective III (c) Biological Techniques		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.</p> <p>PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To develop a strong and competent knowledge in Botany.</p> <p>PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.</p>	<p>CO 1 - To understand the basic units of measurement.</p> <p>CO 2 - To determine the basic principles and applications of instrument used in biology.</p> <p>CO 3 - To practice and employ in the field of biological techniques.</p> <p>CO 4 - To demonstrate use the techniques, skills, tools necessary for practice.</p> <p>CO 5 - To discuss the structure and functions of biological Techniques.</p> <p>CO 6 - To operate the biological techniques properly, work safely, competently and effectively in the laboratory in a team.</p>
165	BC17P5	Major Practical V - Taxonomy and Economic Botany & Biochemistry and Biophysics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To develop a strong and competent knowledge in Botany.</p> <p>PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.</p> <p>PSO 4 - To create green environment to protect nature for future sustenance.</p>	<p>CO 1 - To identify the plant parts from commonly available plants.</p> <p>CO 2 - To identify the family and describe the plant parts and floral parts.</p> <p>CO 3 - To record the economically important products from the prescribed families in the syllabus.</p> <p>CO 4 - To estimation, titration, separation and separation of biomolecules.</p> <p>CO 5 - To identify spotters (i.e. Photos/Models/Instruments).</p> <p>CO 6 - To demonstrate the qualitative and quantitative analysis of Glucose, Starch, Protein and Lipids.</p>
166	BSK175	Skill Based Course (*SBC) – Floriculture	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To develop a strong and competent knowledge in Botany.</p> <p>PSO 4 - To create green environment to protect nature for future sustenance.</p>	<p>CO 1 - To understand the importance of the features of garden.</p> <p>CO 2 - To apply the acquired knowledge and practical skill in developing ornamental garden.</p> <p>CO 3 - To understand the process of plant growth.</p> <p>CO 4 - To recall the methods of harvesting, packing and marketing of cut flowers.</p> <p>CO 5 - To create aesthetic arrangement of dry flower decoration.</p> <p>CO 6 - To prepare the students for a job in plant nursery or commercial grower or floral whole sale.</p>
167	BC1761	Major Core VIII - Genetics, Biostatistics and Bioinformatics	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<p>PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.</p> <p>PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To develop a strong and competent knowledge in Botany.</p> <p>PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.</p>	<p>CO 1 - To understand Mendelian principle and predict genetic inheritance patterns.</p> <p>CO 2 - To analyze the facts of non-Mendelian inheritance and have conceptual knowledge on alleles and their linkage.</p> <p>CO 3 - To examine the various stages of cell division and also a clear knowledge on DNA structure.</p> <p>CO 4 - To generate biological interpretations and conclusions from data of scientific research.</p> <p>CO 5 - To develop skills to become employable as professionals in biochemical industries.</p>
168	BC1762	Major Core IX - Biotechnology and Molecular biology		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<p>PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.</p> <p>PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To develop a strong and competent knowledge in Botany.</p> <p>PSO 4 - To create green environment to protect nature for future sustenance.</p>	<p>CO 1 - To acquaint the core concepts and fundamentals of plant biotechnology.</p> <p>CO 2 - To develop competency on different types of plant tissue culture.</p> <p>CO 3 - To understand the mechanisms of genetic information.</p> <p>CO 4 - To get an insight of chromosome abnormalities and related human syndromes.</p> <p>CO 5 - To develop skills to become employable as professionals in Biotechnology Industries</p>
169	BC1763	Major Core X - Plant Physiology and Metabolism		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.</p> <p>PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To develop a strong and competent knowledge in Botany.</p> <p>PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.</p>	<p>CO 1 - To understand water relation of plants with respect to various physiological processes.</p> <p>CO 2 - To explain efficiency symptoms of macro and micronutrients in plants.</p> <p>CO 3 - To relate complementary metabolic pathways such as photosynthesis and respiration in energy acquisition.</p> <p>CO 4 - To analyse nitrogen metabolism and its significance.</p> <p>CO 5 - To assess dormancy and germination in plants.</p>

170	BC1764	Major - Elective III (a) - Marine Botany	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.</p> <p>PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To develop a strong and competent knowledge in Botany.</p> <p>PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.</p>	<p>CO 1 - To describe the types of marine habitat and their relationship with environment</p> <p>CO 2 - To compare the threats and conservation of seaweeds and sea grasses.</p> <p>CO 3 - To evaluate how natural events and human activities affect coastal habitats.</p> <p>CO 4 - To create a broad knowledge about themarine products and their economic value.</p> <p>CO 5 - To describe the role of mangroves in conservation of marine flora and fauna.</p>
171	BC1765	Major - Elective III (b) - Organic Farming	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.</p> <p>PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p> <p>PO 6 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To develop a strong and competent knowledge in Botany.</p> <p>PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.</p>	<p>CO 1 - To understand the concept of organic farming and its importance.</p> <p>CO 2 - To apply the knowledge of organic nutrients and organic pest management in farming.</p> <p>CO 3 - To demonstrate the use of biocontrol agents, botanicals and other plant growthpromoting preparations in organic farming.</p> <p>CO 4 - To learn the techniques of different concepts of composting methods.</p> <p>CO 5 - To empower the employment opportunity of rural youth at village level in organic market as organic growers, stakeholders, and entrepreneurs.</p>
172	BC1766	Major - Elective III (c) - Ecotourism	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.</p> <p>PO 6 - To impart communicative skills and ethical values.</p>	<p>PSO 1 - To develop a strong and competent knowledge in Botany.</p> <p>PSO 4 - To create green environment to protect nature for future sustenance.</p>	<p>CO 1 - To recognize the values of natural heritage.</p> <p>CO 2 - To create environmental and cultural awareness to develop sustainable eco-tourism spots.</p> <p>CO 3 - To understand the impact of ecotourism on economy, socio-economic and environment of a country.</p> <p>CO 4 - To appreciate and admire the varieties of tourist centres.</p> <p>CO 5 - To evaluate the role of local community in eco-tourism.</p>
173	BC17P6	Major Practical VI - Genetics, Biostatistics and Bioinformatics & Biotechnology and Molecular Biology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To develop a strong and competent knowledge in Botany.</p> <p>PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.</p> <p>PSO 4 - To create green environment to protect nature for future sustenance.</p>	<p>CO 1 - To understand and identify the locally available common plants.</p> <p>CO 2 - To identify the family and describe the plant parts and floral parts.</p> <p>CO 3 - To record the economically important products from the prescribed families in the syllabus.</p> <p>CO 4 - To prepare buffer solution for biological and biotechnological experiments.</p> <p>CO 5 - To estimate and compare the biomolecules quantitatively.</p> <p>CO 6 - To identify spotters (i.e., Photos/Models/Instruments) related to biochemistry and biophysics.</p> <p>CO 7 - To do qualitative analysis of glucose, starch, protein and lipids.</p>
174	BC17P7	Major Practical VII - Microbiology and Plant Pathology & Plant Physiology and Metabolism	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To develop a strong and competent knowledge in Botany.</p> <p>PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.</p> <p>PSO 4 - To create green environment to protect nature for future sustenance.</p>	<p>CO 1 - To identify the different stages of mitosis from the root tip squash of Onion.</p> <p>CO 2 - To solve genetic problems related to monohybrid, dihybrid ratio and interaction of genes.</p> <p>CO 3 - To interpret experimental data using biostatics.</p> <p>CO 4 - To identify spotters (Photos/Models).</p> <p>CO 5 - To be familiar with sterilization techniques.</p> <p>CO 6 - To demonstrate Preparation of MS medium.</p> <p>CO 7 - To analyse PCR Technique: Southern and Northern Blotting technique.</p>
175	PB2011	Core I - Plant Diversity I – Algae, Fungi, Lichens and Bryophytes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To develop a strong and competent knowledge in Botany.</p> <p>PSO 2 - To evaluate ecological interconnectedness of life on earth.</p>	<p>CO 1 - To analyse the causes and effects of pollution on various spheres of earth.</p> <p>CO 2 - To understand the causes of climate change and its effect on environment.</p> <p>CO 3 - To examine the anthropogenic activities in soil desertification.</p> <p>CO 4 - To be aware of the importance of wet lands.</p> <p>CO 5 - To explain the reasons for biodiversity loss.</p>
176	PB2012	Core II – Microbiology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 2 - To analyse complex problems, think independently, formulate and perform quality research.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations.</p> <p>PSO 4 - To create green environment to protect nature for future sustenance.</p>	<p>CO 1 - To remember the basic concepts of plant diversity.</p> <p>CO 2 - To understand the morphological diversity of thallophytes.</p> <p>CO 3 - To evaluate the life history of different thallophytic members.</p> <p>CO 4 - To analyze the thallophytes found in water bodies.</p> <p>CO 5 - To create a protocol to assess the role of thallophytes with industrial applications.</p> <p>CO 6 - To apply the knowledge attained from evolutionary aspects of plant diversity towards research.</p>

177	PB2013	Core III – Plant Anatomy & Embryology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 2 - To evaluate ecological interconnectedness of life on earth.	CO 1 - To understand the basic concepts of microbiology and immunology. CO 2 - To remember the classification and nomenclature of microorganisms and plant diseases. CO 3 - To apply modern techniques to detect antigen, antibodies, pathogens and its controlling measures. CO 4 - To evaluate the role of antimicrobial drugs and its resistance. CO 5 - To analyze the microbes present in milk, water, soil and plants. CO 6 - To create a protocol for identification of gram positive and gram negative bacteria.
178	PB2014	Elective I – (a) Marine Biology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 3 - To experience in seeking external funds for their research from a diversity of resources.	CO 1 - To understand the characteristics of specialized cells and their components. CO 2 - To remember the knowledge of plant cells , tissues and functional theories. CO 3 - To apply the knowledge of anatomical studies in different field. CO 4 - To evaluate the nature and secret of seed development. CO 5 - To analyze the structural differences among different taxa of vascular plants.
179	PB2015	Elective I – (b) Organic Farming	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 3 - To experience in seeking external funds for their research from a diversity of resources.	CO 1 - To understand the basic characteristics and biological processes of marine habitat. CO 2 - To remember the diversity of marine habitat. CO 3 - To apply different techniques to identify bioactive compounds. CO 4 - To evaluate the inter-relationships of mangroves, sea grasses, corals and salt marsh plants. CO 5 - To analyze the different types of pollution in marine environment. CO 6 - To create a protocol for producing useful products by cultivating marine organisms.
180	PB2021	Core IV – Plant Diversity II - Pteridophyta, Gymnosperms and Palaeobotany	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 5 - To emerge as expressive, ethical and responsive citizens with proven expertise.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 2 - To evaluate ecological interconnectedness of life on earth.	CO 1 - To understand the role of micro and macro nutrients in plant growth and development. CO 2 - To remember the principles of organic and ecological approaches in agriculture. CO 3 - To analyse the soil types, agricultural waste and nature of pests in fields apply different techniques to identify bioactive compounds. CO 4 - To create organic farming and gardening methods that sustain profitable production, and environmental health.
181	PB2022	Core V – Research Methodology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To analyse complex problems, think independently, formulate and perform quality research. PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 3 - To experience in seeking external funds for their research from a diversity of resources.	CO 1 - To understand the life cycle and major evolutionary trends of non – flowering plants. CO 2 - To remember, recognize and identify the non – flowering plants. CO 3 - To analyze the inter-relationship between Pteridophytes and Gymnosperms. CO 4 - To evaluate and compare the evolution of gametophytes and sporophytes of Pteridophytes. CO 5 - To apply the knowledge attained from evolutionary aspects of plant diversity towards research. CO 6 - To create methods to extract, prepare, preserve and catalogue fossils.
182	PB2023	Core VI – Cell Biology and Biomolecules	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To carry out internship programmes and research projects to develop scientific skills and innovative ideas. PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 5 - To integrate the knowledge of botany for global sustainable development.	CO 1 - To remember the basic concepts of research and its methodologies. CO 2 - To understand the principles and working mechanisms of various instruments. CO 3 - To apply computer skills in research. CO 4 - To analyze the biological data in solving biological problems. CO 5 - To create skills in qualitative and quantitative data analysis and presentation.
183	PB2024	Elective II – (a) Herbalism	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe. PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 5 - To integrate the knowledge of botany for global sustainable development.	CO 1 - To understand the diversity of cells and the role of compartmentalization and cell signaling. CO 2 - To remember the role of inorganic and organic molecules to life. CO 4 - To understand the structure and functions of different biomolecules. CO 5 - To apply the basic principles and concepts of enzyme regulation. CO 6 - To analyze the modern techniques in cellular biology.



184	PB2025	Elective II – (b) Evolutionary Biology		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe. PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 3 - To experience in seeking external funds for their research from a diversity of resources.	CO 1 - To remember the traditional systems of medicines in terms of Siddha, Ayurvedha, and Unani. CO 2 - To understand the conservation of medicinal plants –in situ and ex situ. CO 3 - To apply the methods that extract oil from Eucalyptus, Cymbopogon, Rose, and Santalum. CO 4 - To create the protocol for extracting withanolides, hyoscyamine and vinblastine. CO 5 - To analyze crude drugs both qualitatively and quantitatively.
185	PB20P1	Practical I - Plant Diversity I – Algae, Fungi, Lichens and Bryophytes, Microbiology and Plant Anatomy &Embryology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To analyse complex problems, think independently, formulate and perform quality research. PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 5 - To integrate the knowledge of botany for global sustainable development.	CO 1 - To analyze the major genetic and ecological processes underlying evolution and selection. CO 2 - To remember the theory of evolution considering Darwinism and Modern Synthetic Theory. CO 3 - To understand the population genetic consequences of selection. CO 4 - To create evolutionary hypotheses for a wide variety of biological phenomena. CO 5 - To apply evolutionary principles in research.
186	PB20P2	Practical II - Plant Diversity II- Pteridophyta, Gymnosperms and Palaeobotany, Research Methodology and Cell Biology and Biomolecules	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To analyse complex problems, think independently, formulate and perform quality research. PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 3- To experience in seeking external funds for their research from a diversity of resources.	CO 1 - To understand the thallophytes by micropreparation. CO 2 - To analyze the cryptogams on the basis of morphological characters. CO 3 - To evaluate the methodology to differentiate gram positive and gram negative bacteria. CO 5 - To apply the knowledge of anatomical studies in research. CO 6 - To evaluate the nature and defects of wood.
187	PB2031	Core VII – Taxonomy of Angiosperms	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	PO 3 - To become successful professionals and entrepreneurs. PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 5 - To integrate the knowledge of botany for global sustainable development.	CO 1 - To differentiate between natural and artificial system of classification CO 2 - To apply sketches to identify the flora CO 3 - To collect and prepare herbaria for future use CO 4 - To record the rules and regulations framed by ICBN
188	PB2032	Core VIII – Genetics and Molecular Biology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To carry out internship programmes and research projects to develop scientific skills and innovative ideas. PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 2 - To evaluate ecological interconnectedness of life on earth.	CO 1 - To understand the organization of cell organelles and genes. CO 2 - To differentiate between mitochondrial DNA and chloroplast DNA. CO 3 - To evaluate the dissociation and re-association kinetics of DNA. CO 4 - To construct different types of plasmids and operons. CO 5 - To analyze transcription and translation of prokaryotes and eukaryotes CO 6 - To evaluate the problems in genetics. CO 5 - To interpret biological knowledge in comparing and ranking plants. CO 6 - To evaluation of plants by using dichotomous keys.
189	PB2033	Elective III – (a) Horticulture		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To become successful professionals and entrepreneurs. PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 5 - To integrate the knowledge of botany for global sustainable development.	CO 1 - To categorize the propagation of horticultural crops. CO 2 - To describe orchard cultivation. CO 3 - To design a kitchen garden in growing vegetables and greens. CO 4 - To state the importance and principles of lawns, topiary and pergolas. CO 5 - To understand the methods involved in hybridization. CO 6 - To evaluate the molecular approaches for crop improvement.
190	PB2034	Elective III – (b) Forestry		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe. PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 5 - To integrate the knowledge of botany for global sustainable development.	CO 1 - To categorize the types of forests in Tamilnadu. CO 2 - To identify the reasons for degradation of forest. CO 3 - To summarize the methods in managing and conserving the forest. CO 4 - To understand the objectives, advantages and disadvantages of agroforestry. CO 5 - To determine the role of botanical gardens,zoos, national parks, and sanctuaries. CO 6 - To evaluate the utilization of forest.
191	PB20PR	Research Project	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe. PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 5 - To integrate the knowledge of botany for global sustainable development.	CO 1 - To explore new areas of research in Botany and alliedfieldof lifesience. CO 2 - To analyze are search problem and construct tools for data collection. CO 3 - To write research reports and present results in thescientific community. CO 4 - To develop skills to serve in Life science related industries and agencies. CO 5 - To develop skills to publish articles in reputed journals.

192	PB20S1	Self Learning Course - Biology for competitive exam – I	<input checked="" type="checkbox"/>				PO 3 - To become successful professionals and entrepreneurs. PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 4 - To apply the acquired conceptual knowledge by connecting disciplinary and interdisciplinary aspects of Botany.	CO 1 - To explore new areas of research in Botany and allied field of life science. CO 2 - To analyze a research problem and construct tools for data collection. CO 3 - To write research reports and present results in the scientific community. CO 4 - To develop skills to serve in Life science related industries and agencies. CO 5 - To develop skills to publish articles in reputed journals.
193	PB2041	Core IX - Plant Physiology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To become successful professionals and entrepreneurs. PO 6 - To utilize the obtained scientific knowledge to create eco-friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 4 - To apply the acquired conceptual knowledge by connecting disciplinary and interdisciplinary aspects of Botany.	CO 1 - To understand the organization of cell organelles. CO 2 - To know the molecular and metabolic mechanisms of plants. CO 3 - To evaluate gene interactions. CO 4 - To analyze Transcription and Translation of Prokaryotes and Eukaryotes. CO 5 - To classify the plant diseases.
194	PB2042	Core X - Plant Ecology and Phytogeography		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	PO 3 - To become successful professionals and entrepreneurs. PO 6 - To utilize the obtained scientific knowledge to create eco-friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 5 - To integrate the knowledge of botany for global sustainable development.	CO 1 - To relate the physical and chemical process occurring in plants. CO 2 - To understand the molecular and metabolic mechanisms of plants. CO 3 - To generalize a minor research using their theory knowledge. CO 4 - To examine, compare and conclude the stressed and stress free plants. CO 5 - To measure the biological mechanisms that takes place inside the plants. CO 6 - To design a protocol for plant regeneration under aseptic condition.
195	PB2043	Core XI – Biotechnology & Bioinformatics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe. PO 6 - To utilize the obtained scientific knowledge to create eco-friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 3 - To experience in seeking external funds for their research from a diversity of resources.	CO 1 - To understand the scope and importance of ecosystem. CO 2 - To distinguish the difference between hydrosere and xerosere. CO 3 - To list out the various food chains in ecosystem. CO 4 - To implement the mode of studying vegetation. CO 5 - To understand the importance of conservation strategies.
196	PB2044	Elective IV – (a) Phytochemistry and Pharmacognosy	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		PO 1 - To carry out internship programmes and research projects to develop scientific skills and innovative ideas. PO 6 - To utilize the obtained scientific knowledge to create eco-friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 3 - To experience in seeking external funds for their research from a diversity of resources.	CO 1 - To understand the importance of biotechnology and design a plant tissue culture laboratory. CO 2 - To differentiate batch, continuous and fed batch culture. CO 3 - To evaluate the pros and cons of Transgenic plants. CO 4 - To recall the different aspects of pharmaceuticals. CO 5 - To apply different databases in biological sciences.
197	PB2045	Elective IV – (b) Entrepreneurial Botany	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	PO 1 - To carry out internship programmes and research projects to develop scientific skills and innovative ideas. PO 3 - To become successful professionals and entrepreneurs.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 3 - To experience in seeking external funds for their research from a diversity of resources.	CO 1 - To create protocol for the production of Mushroom. CO 2 - To understand the nutritive value of SCP. CO 3 - To justify the impact of organic fertilizers over synthetic fertilizers. CO 4 - To summarize the aesthetic sense of gardening. CO 5 - To know the different funding agencies.
198	PB20P3	Practical III - Taxonomy of Angiosperms & Genetics and Molecular Biology.	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	PO 1 - To carry out internship programmes and research projects to develop scientific skills and innovative ideas. PO 2 - To analyse complex problems, think independently, formulate and perform quality research.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 3 - To experience in seeking external funds for their research from a diversity of resources.	CO 1 - To isolate the DNA from plant materials. CO 2 - To separation of biomolecules using spectrophotometry. CO 3 - To analyse the floral parts and relate to its corresponding family. CO 4 - To solve genetics related problems.
199	PB20P4	Practical IV - Plant Physiology, Plant Ecology & Phytogeography and Biotechnology & Bioinformatics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		PO 1 - To carry out internship programmes and research projects to develop scientific skills and innovative ideas. PO 2 - To analyse complex problems, think independently, formulate and perform quality research.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 3 - To experience in seeking external funds for their research from a diversity of resources.	CO 1 - To analyze DO, BOD and COD of water. CO 2 - To prepare tissue culture media, initiate callus culture, anther culture, pollen culture, etc. CO 3 - To identification of phytoplanktons in water bodies. CO 4 - To evaluate the metabolic reactions in plants. CO 5 - To report on common environmental problems, their consequences and possible solutions.
200	PB20S2	Self Learning Course - Biology for competitive exam – II	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To carry out internship programmes and research projects to develop scientific skills and innovative ideas. PO 6 - To utilize the obtained scientific knowledge to create eco-friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 3 - To evaluate ecological interconnectedness of life on earth.	CO 1 - To analyze the relationship between different ecological groups CO 2 - To understand the importance of biotechnology and in various fields CO 3 - To evaluate the origin and development of different meristems CO 4 - To apply the conceptual knowledge to operate biotechnological equipments CO 5 - To formulate and perform statistical problems
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201	BC2011	Major Core I - Algae, Fungi and Lichens	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To increase the awareness and appreciation of human friendly algae and their economic importance. CO 2 - To develop an understanding of microbes and fungi and appreciate their adaptive strategies. CO 3 - To develop critical understanding on morphology, anatomy and reproduction of Bryophytes, Pteridophytes and Gymnosperms. CO 4 - To compare the structure and function of cells and explain the development of cells. CO 5 - To understand the core concepts and fundamentals of plant biotechnology and genetic engineering
202	BA2011	Allied I - Chemistry of Life	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To face challenging competitive examinations that offer rewarding careers. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To learn the structure, chemistry and functions of cellular organelles and non-living inclusions. CO 2 - To understand the structure, properties and fundamentals of biomolecules. CO 3 - To identify the characteristics and stages of mitosis, meiosis and cell cycle. CO 4 - To compare the beneficial effects of vitamin and mineral supplements in the diet. CO 5 - To learn the technique of Cell biology.
203	BNM201	Non Major Elective NME I - Gardening and Floriculture (NMEC)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 5 - To seek entrepreneurship through skill based, value added and related courses.	CO 1 - To understand the importance of nursery management and gardening. CO 2 - To compare the different methods of vegetative propagation in order to propagate ornamental and commercial flowers. CO 3 - To analyze the different methods of weed control and harvest treatments of horticultural crops. CO 4 - To design methods to grow a variety of garden plants in a diverse set of environment to become an entrepreneur.
204	BC2021	Major Core II - Plant Anatomy and Developmental Botany	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 5 - To seek entrepreneurship through skill based, value added and related courses.	CO 1 - To recall the structure and functions of meristem, simple and complex tissues. CO 2 - To differentiate primary and secondary structures. CO 3 - To examine the nodal anatomy types. CO 4 - To interpret the different types of endosperms. CO 5 - To learn about double fertilization and their significance. CO 6 - To understand the basic knowledge of apomixis and polyembryony in the field of crop improvement.
205	BC20P1	Practical I - Algae, Fungi, Lichens and Plant Anatomy and Developmental Botany	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		PSO 1 - To develop a strong and competent knowledge in Botany. PSO 5 - To seek entrepreneurship through skill based, value added and related courses.	CO 1 - To observe and identify different types of tissues and stomata. CO 2 - To prepare plant material for microscopic observation. CO 3 - To draw appropriate anatomical diagrams from the sectioned plant material using microscope. CO 4 - To differentiate and draw diagrams of nodes. CO 5 - To observe and identify the slides of different stages of microsporogenesis. CO 6 - To dissect and display the different stages of Tridax embryo.
206	BA2021	Allied I - Theory : - Taxonomy of Angiosperms and Herbal Technology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 2 - To communicate appropriately and effectively in science and also interact productively with people from diverse background.	CO 1 - To understand the basic knowledge of taxonomy by learning selected families of angiosperms. CO 2 - To understand the characters of the families according to Bentham & Hooker's system of Classification. CO 3 - To improve the awareness and appreciation of traditional medicinal practices. CO 4 - To apply the basic medicinal plants and its utilization. CO 5 - To create new strategies to enhance growth of medicinal herbs considering the practical issues pertinent to India. CO 6 - To evaluate the drug adulteration through the biological testing.
207	BA20P1	Allied Practical I - Chemistry of Life and Taxonomy of Angiosperms and Herbal Technology		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To dissect and display the floral parts of the families studied and draw floral parts and write floral formula. CO 2 - To assign the plant provided to the respective families. CO 3 - To know the relevance of herbal drugs in Indian system of medicine. CO 4 - To analyze the phytochemicals present in plant parts.
208	BNM202	Non Major Elective NME II - Biofertilizers, Biofuels and Biopesticides (NMEC)		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To design novel mechanisms for the sustainable utilization of natural resources. CO 2 - To understand the role of microbes in bio-composting. CO 3 - To utilize the technique studied for biofuel production using suitable production. CO 4 - To learn different skills in bioproduct processing to become an entrepreneur. CO 5 - To know the efficacy of biocontrol mechanism over chemical application.

209	BC1731	Major Core III - Archegoniate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To describe the general characters of early land plants. CO 2 - To interpret the ecological and economic importance of archegoniate. CO 3 - To describe the external, internal and reproduction of archegoniate. CO 4 - To differentiate life cycle patterns of archegoniate. CO 5 - To classify Cryptogams and comment on the stelar evolution in pteridophytes. CO 6 - To compare the fossil members of pteridophytes and gymnosperms
210	BC17P3	Major Practical Paper - III Archegoniate	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	PO 2 - To relate the theory and practical knowledge to solve the problems of the society. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 4 - To integrate theoretical and practical knowledge to develop new drugs.	CO 1 - To explore new areas of research in Botany and allied field of lifescience. CO 2 - To analyze research problem and construct tools for data collection. CO 3 - To write research reports and present results in the scientific community. CO 4 - To develop skills to serve in Life science related industries and agencies. CO 5 - To develop skills to publish articles in reputed journals.
211	BC1732	Major Elective – 1 (a) Herbal Botany	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 2 - To apply the contextual knowledge in Botany to improve the supply of medicines, food, fibers and other plant products to the society.	CO 1 - To develop skills to grow herbs and empower entrepreneurship. CO 2 - To compare the side effects of allopathic medicine with native medicine. CO 3 - To compare the different types of indigenous medicine. CO 4 - To incorporate the novel values of herbs as food supplement. CO 5 - To understand the chemical constituents of important medicinal herbs. CO 6 - To demonstrate the use of locally available medicinal plants.
212	BC1733	Major Elective – 1 (b) Nursery and Gardening	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To relate the theory and practical knowledge to solve the problems of the society. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To incorporate lab to land programme by raising home garden and nurseries. CO 2 - To evaluate seed dormancy. CO 3 - To practice the different techniques in propagating horticultural plants. CO 4 - To explain the needed fertilizers in soil management. CO 5 - To understand the external factors necessary for plant growth. CO 6 - To explain the cultivation of different vegetable .
213	BC1734	Major Elective – 1 (c) Agricultural Botany	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To understand form, function and process within the plant. CO 2 - To analyse seed technology. CO 3 - To understand the physiological process within the plants in order to appreciate the diversity in plants and crops. CO 4 - To choose crops for different environments. CO 5 - To identify the factors affecting the crops. CO 6 - To develop skills by cultivating cereals and pulse.
214	BA1731	Allied II - Theory : Taxonomy of Angiosperms and Plant Physiology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To recall the main features of angiosperms. CO 2 - To understand the respiratory processes carried out by plants. CO 3 - To apply their physical and biochemical knowledge to evaluate the processes involved in photosynthesis. CO 4 - To analyze the various processes involving in water uptake and transport in plants. CO 5 - To classify the different plants by the natural, artificial and phylogenetic classification. CO 6 - To interpret the role of growth hormones in plants.
215	BC17S1	Self Learning Course - Plant Resource Utilization	<input checked="" type="checkbox"/>				PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education. PO 6 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To recall the main features of angiosperms. CO 2 - To understand the respiratory processes carried out by plants. CO 3 - To apply their physical and biochemical knowledge to evaluate the processes involved in photosynthesis. CO 4 - To analyze the various processes involving in water uptake and transport in plants. CO 5 - To classify the different plants by the natural, artificial and phylogenetic classification. CO 6 - To interpret the role of growth hormones in plants.

216	BC1741	Major Core IV – Plant Ecology and Phytogeography	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To realise the vast expansion of biomass systems, both for "green energy" and for other renewable resources. CO 2 - To understand the nutritive value of Single Cell Protein and learnt the techniques of producing SCP from microorganisms. CO 3 - To recognize the need to protect and conserve Mother Nature. CO 4 - To find ways to have sustainable management of natural resources. CO 5 - To gain awareness of career options in the biological sciences.
217	BC1742	Major - Elective II (a) Biological Resources	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 4 - To apply the contextual knowledge in Botany to improve the supply of medicines, food, fibers and other plant products to the society.	CO 1 - To list the different constituents of food, methods of cooking and preservation . CO 2 - To demonstrate the side effects of food additives. CO 3 - To prepare value-added products of milk and vegetables. CO 4 - To explain the industrial production of beer, ethyl alcohol, vinegar and amylase . CO 5 - To design balanced diet CO6- To test for detection of food adulterants and colourants.
218	BC1743	Major - Elective II (b) Food Science	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 4 - To apply the contextual knowledge in Botany to improve the supply of medicines, food, fibers and other plant products to the society.	CO 1 - To record the biodiversity taxa at different region. CO 2 - To assemble with any biodiversity management organizations at national or international level. CO 3 - To organize biodiversity awareness programmes. CO 4 - To apply the knowledge on conservation in day to day life. CO 5 - To assess the value of biodiversity through valid methodologies. CO 6 - To categorize the hot spots of biodiversity in national level.
219	BC1744	Major - Elective II (c) Biodiversity and Human Welfare	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.	PSO 1 - To develop a strong and competent knowledge in Botany, create green environment to protect nature for future sustenance. PSO 4 - To apply the contextual knowledge in Botany to improve the supply of medicines, food, fibers and other plant products to the society.	CO 1 - To record the locally available Hydrophytes, Xerophytes and Halophytes. CO 2 - To construct a quadrat for vegetative analysis. CO 3 - To demonstrate the measurement of soil permeability. CO 4 - To practice the preparation of plant material for microscopic observation. CO 5 - To distinguish the phytogeography models. CO 6 - To develop practical skills to visit field for individual/group work.
220	BC17P4	Major Practical IV - Plant Ecology and Phytogeography	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.	PSO 1 - To develop a strong and competent knowledge in Botany, create green environment to protect nature for future sustenance. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To recognize the feature of plant anatomy: at the cell, tissue and organ level. CO 2 - To know the complexity of xylem and phloem. CO 3 - To compare and contrast the organization of mitotic and meiotic cell division in plant and to learn about cell cycle. CO 4 - To compare the structure and functions of living and non - living inclusions in plants. CO 5 - To understand about the difference between the primary and secondary structures of plant.
221	BA1741	Allied II – Theory : Cell Biology and Plant Anatomy	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries. PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.	PSO 1 - To develop a strong and competent knowledge in Botany, create green environment to protect nature for future sustenance. PSO 4 - To communicate appropriately and effectively in science and also interact productively with people from diverse background.	CO 1 - To dissect the floral parts of the prescribed families and explain with appropriate diagrams. CO 2 - To identify electron micrographs of the cell organelles and tissues. CO 3 - To draw the anatomical structures of plant parts, detect the tissues and stomatal types. CO 4 - To set-up the experiments to show physiological process, examine the non living inclusions
222	BA17P2	Allied II – Practical: Taxonomy, Anatomy, Plant Physiology, Cell Biology and Plant Anatomy	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.	PSO 1 - To develop a strong and competent knowledge in Botany, create green environment to protect nature for future sustenance. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To know about Taxonomy and Anatomy CO 2 - To understand Plant Physiology and Cell Biology
223	BC17S2	Self Learning Course - Algal Biotechnology	<input checked="" type="checkbox"/>				PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education. PO 6 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 4 - To apply the contextual knowledge in Botany to improve the supply of medicines, food, fibers and other plant products to the society.	CO 1 - To understand the potentiality of algal resources. CO 2 - To gain interest in value added crops.

224	BC1751	Major Core V - Taxonomy and Economic Botany	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 6 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. create green environment to protect nature for future sustenance. PSO 4 - To apply the contextual knowledge in Botany to improve the supply of medicines, food, fibers and other plant products to the society.	CO 1 - To relate the modifications in plant parts. CO 2 - To differentiate the artificial, natural and phylogenetic classification and learn about ICN rules. CO 3 - To evaluate the taxonomists of India. CO 4 - To recall the characters of some important families. CO 5 - To understand the economic importance of plants and their use at various levels. CO 6 - To construct digital herbarium and learn about Herbarium techniques
225	BC1752	Major Core VI - Biochemistry and Biophysics	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education. PO 6 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany create green environment to protect nature for future sustenance. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To identify the levels of structure in proteins and describe its biological roles. CO 2 - To understand the structure, properties and fundamentals of biomolecules. CO 3 - To demonstrate thermodynamic principles in biological energy conversion. CO 4 - To analyze enzyme activity. CO 5 - To compare the structure of saturated fatty acids with unsaturated fatty acids. CO 6 - To analyse the biological data and interpret data with the hypothesis.
226	BC1753	Major Core VII - Microbiology and Plant Pathology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 6 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany create green environment to protect nature for future sustenance. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To familiarize with basic information about microbiology and microbiologists. CO 2 - To explore the role and relevance of viruses and bacteria in the field of microbiology. CO 3 - To work safely, competently and effectively in the laboratory in a team. CO 4 - To undertake careers in microbiology through the hands-on training techniques they learnt. CO 5 - To recognize the signs and symptoms of diseases and the major issues that arise due to such infections.
227	BC1754	Major - Elective III (a) Horticulture and Plant Breeding	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.	PSO 1 - To develop a strong and competent knowledge in Botany create green environment to protect nature for future sustenance. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To understand the scope of horticulture. CO 2 - To develop creative skills for establishment of an orchard. CO 3 - To explain the propagation methods by seeds, cuttings, grafting, budding and layering. CO 4 - To apply the knowledge of horticultural techniques to develop ornamental gardens. CO 5 - To recall the special techniques in plant breeding. CO 6 - To analyze the employability skills in the field of horticulture.
228	BC1755	Major - Elective III (b) Forestry	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany create green environment to protect nature for future sustenance. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To list the different agroforestry technologies and identify ways to classify them into relevant groups. CO 2 - To review the types and distribution of forest with reference to India. CO 3 - To apply forest management principles and practice them in land management. CO 4 - To analyze recreational forestry including Botanical gardens, Zoos, National Parks and Sanctuaries in recreation/conservation of wildlife. CO 5 - To recognize the valuable forest products and the methods of conservation. CO 6 - To report the possible man - made calamities of the forest.
229	BC1756	Major - Elective III (c) Biological Techniques	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.	PSO 1 - To develop a strong and competent knowledge in Botany create green environment to protect nature for future sustenance. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To understand the basic units of measurement. CO 2 - To determine the basic principles and applications of instrument used in biology. CO 3 - To practice and employ in the field of biological techniques. CO 4 - To demonstrate use the techniques, skills, tools necessary for practice. CO 5 - To discuss the structure and functions of biological Techniques. CO 6 - To operate the biological techniques properly, work safely, competently and effectively in the laboratory in a team.
230	BC17P5	Major Practical V - Taxonomy and Economic Botany & Biochemistry and Biophysics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany create green environment to protect nature for future sustenance. PSO 2 - To apply the contextual knowledge in Botany to improve the supply of medicines, food, fibers and other plant products to the society.	CO 1 - To identify the plant parts from commonly available plants. CO 2 - To identify the family and describe the plant parts and floral parts. CO 3 - To record the economically important products from the prescribed families in the syllabus. CO 4 - To estimation, titration, separation and separation of biomolecules. CO 5 - To identify spotters (i.e. Photos/Models/Instruments). CO 6 - To demonstrate the qualitative and quantitative analysis of Glucose, Starch, Protein and Lipids.
231	BSK175	Skill Based Course (*SBC) – Floriculture	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany create green environment to protect nature for future sustenance. PSO 4 - To apply the contextual knowledge in Botany to improve the supply of medicines, food, fibers and other plant products to the society.	CO 1 - To understand the importance of the features of garden. CO 2 - To apply the acquired knowledge and practical skill in developing ornamental garden. CO 3 - To understand the process of plant growth. CO 4 - To recall the methods of harvesting, packing and marketing of cut flowers. CO 5 - To create aesthetic arrangement of dry flower decoration. CO 6 - To prepare the students for a job in plant nursery or commercial grower or floral whole sale.

232	BC1761	Major Core VIII - Genetics, Biostatistics and Bioinformatics	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany create green environment to protect nature for future sustenance. PSO 4 - To apply the contextual knowledge in Botany to improve the supply of medicines, food, fibers and other plant products to the society.	CO 1 - To understand Mendelian principle and predict genetic inheritance patterns. CO 2 - To analyze the facts of non-Mendelian inheritance and have conceptual knowledge on alleles and their linkage. CO 3 - To examine the various stages of cell division and also a clear knowledge on DNA structure. CO 4 - To generate biological interpretations and conclusions from data of scientific research. CO 5 - To develop skills to become employable as professionals in biochemical industries.
233	BC1762	Major Core IX - Biotechnology and Molecular biology		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany create green environment to protect nature for future sustenance. PSO 4 - To apply the contextual knowledge in Botany to improve the supply of medicines, food, fibers and other plant products to the society.	CO 1 - To acquaint the core concepts and fundamentals of plant biotechnology. CO 2 - To develop competency on different types of plant tissue culture. CO 3 - To understand the mechanisms of genetic information. CO 4 - To get an insight of chromosome abnormalities and related human syndromes. CO 5 - To develop skills to become employable as professionals in Biotechnology Industries.
234	BC1763	Major Core X - Plant Physiology and Metabolism		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany create green environment to protect nature for future sustenance. PSO 4 - To apply the contextual knowledge in Botany to improve the supply of medicines, food, fibers and other plant products to the society.	CO 1 - To understand water relation of plants with respect to various physiological processes. CO 2 - To explained efficiency symptoms of macro and micronutrients in plants. CO 3 - To relate complementary metabolic pathways such as photosynthesis and respiration in energy acquisition. CO 4 - To analyse nitrogen metabolism and its significance. CO 5 - To assess dormancy and germination in plants.
235	BC1764	Major - Elective III (a) - Marine Botany	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany create green environment to protect nature for future sustenance. PSO 2 - To apply the contextual knowledge in Botany to improve the supply of medicines, food, fibers and other plant products to the society.	CO 1 - To describe the types of marine habitat and their relationship with environment CO 2 - To compare the threats and conservation of seaweeds and sea grasses. CO 3 - To evaluate how natural events and human activities affect coastal habitats. CO 4 - To create a broad knowledge about themarine products and their economic value. CO 5 - To describe the role of mangroves in conservation of marine flora and fauna.
236	BC1765	Major - Elective III (b) - Organic Farming	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany create green environment to protect nature for future sustenance. PSO 2 - To apply the contextual knowledge in Botany to improve the supply of medicines, food, fibers and other plant products to the society.	CO 1 - To understand the concept of organic farming and its importance. CO 2 - To apply the knowledge of organic nutrients and organic pest management in farming. CO 3 - To demonstrate the use of biocontrol agents, botanicals and other plant growthpromoting preparations in organic farming. CO 4 - To learn the techniques of different concepts of composting methods. CO 5 - To empower the employment opportunity of rural youth at village level in organic market as organic growers, stakeholders, and entrepreneurs.
237	BC1766	Major - Elective III (c) - Ecotourism		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 6 - To impart communicative skills and ethical values.	PSO 1 - To develop a strong and competent knowledge in Botany create green environment to protect nature for future sustenance. PSO 4 - To communicate appropriately and effectively in science and also interact productively with people from diverse background.	CO 1 - To recognize the values of natural heritage. CO 2 - To create environmental and cultural awareness to develop sustainable eco-tourism spots. CO 3 - To understand the impact of ecotourism on economy, socio-economic and environment of a country. CO 4 - To appreciate and admire the varieties of tourist centres. CO 5 - To evaluate the role of local community in eco-tourism.
238	BC17P6	Major Practical VI - Genetics, Biostatistics and Bioinformatics & Biotechnology and Molecular Biology		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany create green environment to protect nature for future sustenance. PSO 2 - To apply the contextual knowledge in Botany to improve the supply of medicines, food, fibers and other plant products to the society.	CO 1 - To understand and identify the locally available common plants. CO 2 - To identify the family and describe the plant parts and floral parts. CO 3 - To record the economically important products from the prescribed families in the syllabus. CO 4 - To prepare buffer solution for biological and biotechnological experiments. CO 5 - To estimate and compare the biomolecules quantitatively. CO 6 - To identify spotters (i.e., Photos/Models/Instruments) related to biochemistry and biophysics. CO 7 - To do qualitative analysis of glucose, starch, protein and lipids.
239	BC17P7	Major Practical VII - Microbiology and Plant Pathology & Plant Physiology and Metabolism	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany create green environment to protect nature for future sustenance. PSO 2 - To apply the contextual knowledge in Botany to improve the supply of medicines, food, fibers and other plant products to the society.	CO 1 - To identify the different stages of mitosis from the root tip squash of Onion. CO 2 - To solve genetic problems related to monohybrid, dihybrid ratio and interaction of genes. CO 3 - To interpret experimental data using biostatistics. CO 4 - To identify spotters (photos/models). CO 5 - To be familiar with sterilization techniques. CO 6 - To demonstrate Preparation of MS medium. CO 7 - To analyse PCR Technique: Southern and Northern Blotting technique.

240	PB2011	Core I - Plant Diversity I – Algae, Fungi, Lichens and Bryophytes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 2 - To evaluate ecological interconnectedness of life on earth.	CO 1 - To analyse the causes and effects of pollution on various spheres of earth. CO 2 - To understand the causes of climate change and its effect on environment. CO 3 - To examine the anthropogenic activities in soil desertification. CO 4 - To be aware of the importance of wet lands. CO 5 - To explain the reasons for biodiversity loss.
241	PB2012	Core II – Microbiology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To analyse complex problems, think independently, formulate and perform quality research. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 2 - To evaluate ecological interconnectedness of life on earth.	CO 1 - To remember the basic concepts of plant diversity. CO 2 - To understand the morphological diversity of thallophytes. CO 3 - To evaluate the life history of different thallophytic members. CO 4 - To analyze the thallophytes found in water bodies. CO 5 - To create a protocol to assess the role of thallophytes with industrial applications. CO 6 - To apply the knowledge attained from evolutionary aspects of plant diversity towards research.
242	PB2013	Core III – Plant Anatomy & Embryology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 2 - To evaluate ecological interconnectedness of life on earth.	CO 1 - To understand the basic concepts of microbiology and immunology. CO 2 - To remember the classification and nomenclature of microorganisms and plant diseases. CO 3 - To apply modern techniques to detect antigen, antibodies, pathogens and its controlling measures. CO 4 - To evaluate the role of antimicrobial drugs and its resistance. CO 5 - To analyze the microbes present in milk, water, soil and plants. CO 6 - To create a protocol for identification of gram positive and gram negative bacteria.
243	PB2014	Elective I – (a) Marine Biology	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe. PO 6 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 3 - To experience in seeking external funds for their research from a diversity of resources.	CO 1 - To understand the characteristics of specialized cells and their components. CO 2 - To remember the knowledge of plant cells, tissues and functional theories. CO 3 - To apply the knowledge of anatomical studies in different field. CO 4 - To evaluate the nature and secret of seed development. CO 5 - To analyze the structural differences among different taxa of vascular plants.
244	PB2015	Elective I – (b) Organic Farming	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe. PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 3 - To experience in seeking external funds for their research from a diversity of resources.	CO 1 - To understand the basic characteristics and biological processes of marine habitat. CO 2 - To remember the diversity of marine habitat. CO 3 - To apply different techniques to identify bioactive compounds. CO 4 - To evaluate the inter-relationships of mangroves, sea grasses, corals and salt marsh plants. CO 5 - To analyze the different types of pollution in marine environment. CO 6 - To create a protocol for producing useful products by cultivating marine organisms.
245	PB2021	Core IV – Plant Diversity II - Pteridophyta, Gymnosperms and Palaeobotany	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe. PO 5 - To emerge as expressive, ethical and responsive citizens with proven expertise.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 2 - To evaluate ecological interconnectedness of life on earth.	CO 1 - To understand the role of micro and macro nutrients in plant growth and development. CO 2 - To remember the principles of organic and ecological approaches in agriculture. CO 3 - To analyse the soil types, agricultural waste and nature of pests in fields apply different techniques to identify bioactive compounds. CO 4 - To create organic farming and gardening methods that sustain profitable production, and environmental health.
246	PB2022	Core V – Research Methodology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To analyse complex problems, think independently, formulate and perform quality research. PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 2 - To evaluate ecological interconnectedness of life on earth.	CO 1 - To understand the life cycle and major evolutionary trends of non – flowering plants. CO 2 - To remember, recognize and identify the non – flowering plants. CO 3 - To analyze the inter-relationship between pteridophytes and gymnosperms. CO 4 - To evaluate and compare the evolution of gametophytes and sporophytes of pteridophytes. CO 5 - To apply the knowledge attained from evolutionary aspects of plant diversity towards research. CO 6 - To create methods to extract, prepare, preserve and catalogue fossils.



247	PB2023	Core VI – Cell Biology and Biomolecules	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To carry out internship programmes and research projects to develop scientific skills and innovative ideas. PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 5 - To integrate the knowledge of botany for global sustainable development.	CO 1 - To remember the basic concepts of research and its methodologies. CO 2 - To understand the principles and working mechanisms of various instruments. CO 3 - To apply computer skills in research. CO 4 - To analyze the biological data in solving biological problems. CO 5 - To create skills in qualitative and quantitative data analysis and presentation.
248	PB2024	Elective II – (a) Herbalism	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe. PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 4 - To apply the acquired conceptual knowledge by connecting disciplinary and interdisciplinary aspects of Botany.	CO 1 - To remember the traditional systems of medicines in terms of Siddha, Ayurveda and Unani. CO 2 - To understand the conservation of medicinal plants - insitu and exsitu. CO 3 - To apply the methods that extract oil from Eucalyptus, Cymbopogon, Rose and Santalum. CO 4 - To create the protocol for extracting Withanolides, Hyoseyamine and Vinblastine. CO 5 - To analyze crude drugs both qualitatively and quantitatively.
249	PB2025	Elective II – (b) Evolutionary Biology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe. PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 4 - To apply the acquired conceptual knowledge by connecting disciplinary and interdisciplinary aspects of Botany.	CO 1 - To remember the traditional systems of medicines in terms of siddha, ayurvedha, and unani. CO 2 - To understand the conservation of medicinal plants –in situ and ex situ. CO 3 - To apply the methods that extract oil from eucalyptus, cymbopogon, rose, and santalum. CO 4 - To create the protocol for extracting withanolides, hyoscyamine and vinblastine. CO 5 - To analyze crude drugs both qualitatively and quantitatively.
250	PB20P1	Practical I - Plant Diversity I – Algae, Fungi, Lichens and Bryophytes, Microbiology and Plant Anatomy &Embryology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To analyse complex problems, think independently, formulate and perform quality research. PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 4 - To apply the acquired conceptual knowledge by connecting disciplinary and interdisciplinary aspects of Botany.	CO 1 - To analyze the major genetic and ecological processes underlying evolution and selection. CO 2 - To remember the theory of evolution considering Darwinism and Modern Synthetic Theory. CO 3 - To understand the population genetic consequences of selection. CO 4 - To create evolutionary hypotheses for a wide variety of biological phenomena. CO 5 - To apply evolutionary principles in research.
251	PB20P2	Practical II - Plant Diversity II- Pteridophyta, Gymnosperms and Palaeobotany, Research Methodology and Cell Biology and Biomolecules	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To analyse complex problems, think independently, formulate and perform quality research. PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 4 - To apply the acquired conceptual knowledge by connecting disciplinary and interdisciplinary aspects of Botany.	CO 1 - To understand vascular cryptogams by micropreparation. CO 2 - To analyse Pteridophytes and Gymnosperms based on their anatomical features. CO 3 - To evaluate macromolecules in biological samples. CO 4 - To analyze different biological data using biostatistics.
252	PB1731	Core VII - Taxonomy of Angiosperms and Economic Botany	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms. PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 5 - To integrate the knowledge of botany for global sustainable development.	CO 1 - To differentiate between natural and artificial system of classification. CO 2 - To apply sketches to identify the flora CO 3 - To collect and prepare herbaria for future use CO 4 - To record the rules and regulations framed by ISBN
253	PB1732	Core VIII - Genetics and Molecular Biology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To recognize the scientific facts behind natural phenomena. PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 5 - To integrate the knowledge of botany for global sustainable development.	CO 1 - To differentiate between natural and artificial system of classification. CO 2 - To apply sketches to identify the flora. CO 3 - To collect and prepare herbaria for future use. CO 4 - To record the rules and regulations framed by ICBN. CO 5 - To interpret biological knowledge in comparing and ranking plants. CO 6 - To evaluation of plants by using dichotomous keys.
254	PB1733	Elective III - (a) Forestry	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe. PO 6 - To utilize the obtained scientific knowledge to create eco - friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 2 - To evaluate ecological interconnectedness of life on earth.	CO 1 - To categorize the types of forest in Tamilnadu CO 2 - To identify the reasons for degradation of forest CO 3 - To summarize the methods in managing and conserving the forest CO 4 - To understand the objectives, advantages and disadvantages of Agroforestry CO 5 - To determine the role of botanical gardens, zoos, national parks and sanitariums CO 6 - To evaluate the utilization of forest

255	PB1734	Elective III - (b) Horticulture and Plant Breeding (Elective III)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe. PO 5 - To carry out internship programme and research projects to develop scientific skills and innovative ideas.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 3 - To experience in seeking external funds for their research from a diversity of resources.	CO 1 - To categorize the propagation of horticultural crops. CO 2 - To describe orchard cultivation. CO 3 - To design a kitchen garden in growing vegetables and greens. CO 4 - To state the importance and principles of lawns, topiary and pergolas. CO 5 - To understand the methods involved in hybridization. CO 6 - To evaluate the molecular approaches for crop improvement.
256	PB17PR	Research Project	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe. PO 6 - To utilize the obtained scientific knowledge to create eco - friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 4 - To integrate theoretical and practical knowledge to develop new drugs.	CO 1 - To explore new areas of research in Botany and allied field of life science. CO 2 - To analyze a research problem and construct tools for data collection. CO 3 - To write research reports and present results in the scientific community. CO 4 - To develop skills to serve in Life science related industries and agencies. CO 5 - To develop skills to publish articles in reputed journals.
257	PB17P3	Practical III - Taxonomy of Angiosperms and Economic Botany, Genetics and Molecular Biology	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	PO 2 - To relate the theory and practical knowledge to solve the problems of the society. PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 5 - To integrate the knowledge of botany for global sustainable development.	CO 1 - To isolate the DNA from plant materials. CO 2 - To separate biomolecules using spectrophotometry CO 3 - To analyze their floral parts and relate to its corresponding family CO 4 - To solve genetics related problems
258	PB17S1	Self Learning Course - Biology for competitive exam – I	<input checked="" type="checkbox"/>				PO 2 - To relate the theory and practical knowledge to solve the problems of the society. PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 5 - To integrate the knowledge of botany for global sustainable development.	CO 1 - To understand the organization of cell organelles. CO 2 - To know the molecular and metabolic mechanisms of plants. CO 3 - To evaluate gene interactions. CO 4 - To analyze transcription and translation of prokaryotes and eukaryotes. CO 5 - To classify the plant diseases.
259	PB1741	Core IX - Plant Physiology and Metabolism	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe. PO 7 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 9 - To use the techniques, skills and modern technology necessary to communicate effectively with professional and ethical responsibility.	CO 1 - To relate the physical and chemical process occurring in plants. CO 2 - To understand the molecular and metabolic mechanisms of plants. CO 3 - To generalize a minor research using their theory knowledge. CO 4 - To examine, compare and conclude the stressed and stress free plants. CO 5 - To measure the biological mechanisms that takes place inside the plants. CO 6 - To design a protocol for plant regeneration under aseptic condition.
260	PB1742	Core X - Environment and Conservation Biology		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe. PO 6 - To utilize the obtained scientific knowledge to create eco - friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 5 - To integrate the knowledge of botany for global sustainable development.	CO 1 - To understand the scope and importance of ecosystem. CO 2 - To distinguish the difference between hydrosere and xerosere. CO 3 - To list out the various food chains in ecosystem. CO 4 - To implement the mode of studying vegetation. CO 5 - To understand the importance of conservation strategies.
261	PB1743	Core XI - Applied Biotechnology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe. PO 7 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 9 - To use the techniques, skills and modern technology necessary to communicate effectively with professional and ethical responsibility.	CO 1 - To understand the importance of biotechnology and design a plant tissue culture laboratory. CO 2 - To differentiate batch, continuous and fed batch culture. CO 3 - To evaluate the pros and cons of transgenic plants. CO 4 - To recall the different aspects of pharmaceuticals. CO 5 - To apply different databases in biological sciences.
262	PB1744	Elective IV - (a) Industrial Microbiology		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe. PO 7 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 7 - To pursue independent study and demonstrate awareness for lifelong learning and professional development apply new useful microbial techniques and store them reliably for later use.	CO 1 - To create protocol for the production of Mushroom. CO 2 - To understand the nutritive value of SCP. CO 3 - To justify the impact of organic fertilizers over synthetic fertilizers. CO 4 - To summarize the aesthetic sense of gardening. CO 5 - To know the different funding agencies.
263	PB1745	Elective IV - (b) Biostatistics and Bioinformatics		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe. PO 6 - To utilize the obtained scientific knowledge to create eco - friendly environment.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 4 - To apply the acquired conceptual knowledge by connecting disciplinary and interdisciplinary aspects of Botany.	CO 1 - To isolate the DNA from plant materials. CO 2 - To separation of biomolecules using spectrophotometry. CO 3 - To analyse the floral parts and relate to its corresponding family. CO 4 - To solve genetics related problems.

264	PB17P4	Practical IV - Plant Physiology and Metabolism, Environment and Conservation Biology and Applied Biotechnology	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	PO 2 - To relate the theory and practical knowledge to solve the problems of the society. PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 5 - To integrate the knowledge of botany for global sustainable development.	CO 1 - To analyze DO, BOD and COD of water. CO 2 - To prepare tissue culture media, initiate callus culture, anther culture, pollen culture, etc. CO 3 - To identification of phytoplanktons in water bodies. CO 4 - To evaluate the metabolic reactions in plants. CO 5 - To report on common environmental problems, their consequences and possible solutions.
265	PB17S2	Self Learning Course - Biology for competitive exam – II	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	PO 2 - To relate the theory and practical knowledge to solve the problems of the society. PO 4 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe.	PSO 1 - To apply fundamental mathematical tools and physical principles in analysing biological situations. PSO 5 - To integrate the knowledge of botany for global sustainable development.	CO 1 - To have a brief knowledge on different areas of Botany. CO 2 - To motivate the students to write competitive examinations.
<b>2019-2020</b>									
266	BC1711	Major Core I – Algae, Fungi and Lichens	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education PO 6 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To identify the important contrast characters of Algae, Fungi and Lichens. CO 2 - To describe ways in which lichens are beneficial to the environment CO 3 - To interpret the general characteristics of lichens CO 4 - To categorize the algal organisms according to Fritsch (1945) CO 5 - To correlate the study of life form, structure, reproduction and life cycle of different classes of Algae CO 6 - To recall the salient features of the different fungi
267	BA1711	Allied I - Theory: Cell Biology and Plant Anatomy	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			PO 2 - To create innovative ideas through laboratory experiments. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To recognize the feature of plant anatomy : at the cell, tissue and organ level. CO 2 - To differentiate Prokaryotes from Eukaryotes. CO 3 - To know the complexity of xylem and phloem. CO 4 - To compare and contrast the organization of mitotic and meiotic cell division in plant and to learn about cell cycle. CO 5 - To compare the structure and functions of living and non - living inclusions in plants. CO 6 - To understand about the difference between the primary and secondary structures of plant.
268	BC17P1	Major Practical I - Algae, Fungi and Lichen	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To observe and identify different types of tissues and stomata. CO 2 - To prepare plant material for microscopic observation. CO 3 - To draw appropriate anatomical diagrams from the sectioned plant material using microscope. CO 4 - To differentiate and draw diagrams of nodes. CO 5 - To observe and identify the slides of different stages of microsporogenesis. CO 6 - To dissect and display the different stages of Tridax embryo.
269	BNM171	Non Major Elective Course (NMEC) – Food and Nutrition	<input checked="" type="checkbox"/>				PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 6 - To impart communicative skills and ethical values.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 2 - To apply the contextual knowledge in Botany to improve the supply of medicines, food, fibers and other plant products to the society. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations. PSO 9 - To integrate the related topics from other branches of science to carry out projects to have a successful career.	CO 1 - To understand the natural sources and nutritive value of food. CO 2 - To discuss the role of balanced diet. CO 3 - To know the pathogenic organisms which occur very often in food and dishes. CO 4 - To recall the methods of food preservation. CO 5 - To test for detection of food adulteration. CO 6 - To collaborate with food industries and FAO of government to develop healthy food products from indigenous food ingredients.
270	BC1721	Major Core II - Plant Anatomy and Embryology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 6 - To impart communicative skills and ethical values.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 7 - To utilize the scientific explanation for the unity and diversity of life on earth.	CO 1 - To recall the structure and functions of meristem, stomata, simple and complex tissues. CO 2 - To differentiate between primary and secondary structures. CO 3 - To understand the epidermal cells and its modification. CO 4 - To interpret the different types of endosperm. CO 5 - To examine the nodal anatomy types. CO 6 - To compare the development of male and female gametophyte.

271	BC17P2	Major Practical II - Plant Anatomy and Embryology and Embryology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To observe and identify different types of tissues and stomata. CO 2 - To prepare plant material for microscopic observation. CO 3 - To draw appropriate anatomical diagrams from the sectioned plant material using microscope. CO 4 - To differentiate and draw diagrams of nodes. CO 5 - To observe and identify the slides of different stages of microsporogenesis. CO 6 - To dissect and display the different stages of <i>Tridax</i> embryo.
272	BA1721	Allied I - Theory : Taxonomy of Angiosperms and Plant Physiology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education PO 6 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 9 - To integrate the related topics from other branches of science to carry out projects to have a successful career.	CO 1 - To recall the main features of angiosperms. CO 2 - To understand the respiratory processes carried out by plants. CO 3 - To apply their physical and biochemical knowledge to evaluate the processes involved in photosynthesis. CO 4 - To analyze the various processes involving in water uptake and transport in plants. CO 5 - To classify the different plants by the natural, artificial and phylogenetic classification. CO 6 - To interpret the role of growth hormones in plants.
273	BA17P1	Allied I - Practical - Cell Biology, Plant Anatomy, Taxonomy of Angiosperms and Plant Physiology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To identify the electron micrographs of the cell organelles, non living inclusions and tissue. CO 2 - To preparation of plant material for microscopic observation. CO 3 - To draw appropriate anatomical diagrams from the sectioned plant material using microscope. CO 4 - To dissect and display the floral parts of the families studied and draw floral parts and write floral formula. CO 5 - To assign the plant provided to the respective families. CO 6 - To demonstrate plant physiology experiments.
274	BNM172	Non Major Elective Course (NMEC) – Eco-Friendly Technology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 5 - To seek entrepreneurship through skill based, value added and related courses.	CO 1 - To know the nutritive value of mushroom and learnt the techniques of mushroom cultivation. CO 2 - To design novel mechanisms for the sustainable utilization of natural resources. CO 3 - To understand the role of microbes in fermentation. CO 4 - To transform waste plant products into biofuels. CO 5 - To make valuable craft articles utilizing the fibers of banana, Cyperus and palm. CO 6 - To become an entrepreneur.
275	BC1731	Major Core III - Archegoniate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 6 - To impart communicative skills and ethical values.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To describe the general characters of early land plants. CO 2 - To interpret the ecological and economic importance of archegoniate. CO 3 - To describe the external, internal and reproduction of archegoniate. CO 4 - To differentiate life cycle patterns of archegoniate. CO 5 - To classify cryptogams and comment on the stellar evolution in pteridophytes. CO 6 - To compare the fossil members of pteridophytes and gymnosperms.
276	BC17P3	Major Practical Paper - III Archegoniate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To relate the theory and practical knowledge to solve the problems of the society. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 4 - To integrate theoretical and practical knowledge to develop new drugs.	CO 1 - To explore new areas of research in Botany and allied field of life science. CO 2 - To analyze a research problem and construct tools for data collection. CO 3 - To write research reports and present results in the scientific community. CO 4 - To develop skills to serve in Life science related industries and agencies. CO 5 - To develop skills to publish articles in reputed journals.
277	BC1732	Major Elective – 1 (a) Herbal Botany	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 2 - To apply the contextual knowledge in Botany to improve the supply of medicines, food, fibers and other plant products to the society. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations. PSO 9 - To integrate the related topics from other branches of science to carry out projects to have a successful career.	CO 1 - To develop skills to grow herbs and empower entrepreneurship. CO 2 - To compare the side effects of allopathic medicine with native medicine. CO 3 - To compare the different types of indigenous medicine. CO 4 - To incorporate the novel values of herbs as food supplement. CO 5 - To understand the chemical constituents of important medicinal herbs. CO 6 - To demonstrate the use of locally available medicinal plants.

278	BC1733	Major Elective – I (b) Nursery and Gardening	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 6 - To impart communicative skills and ethical values.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To incorporate lab to land programme by raising home garden and nurseries. CO 2 - To evaluate seed dormancy. CO 3 - To practice the different techniques in propagating horticultural plants. CO 4 - To explain the needed fertilizers in soil management. CO 5 - To understand the external factors necessary for plant growth. CO 6 - To explain the cultivation of different vegetable.
279	BC1734	Major Elective – I (c) Agricultural Botany	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 4 - To create green environment to protect nature for future sustenance.	CO 1 - To understand form, function and process within the plant. CO 2 - To analyse seed technology. CO 3 - To understand the physiological process within the plants in order to appreciate the diversity in plants and crops. CO 4 - To choose crops for different environments. CO 5 - To identify the factors affecting the crops. CO 6 - To develop skills by cultivating cereals and pulse.
280	BA1731	Allied II - Theory : Taxonomy of Angiosperms and Plant Physiology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To recall the main features of angiosperms. CO 2 - To understand the respiratory processes carried out by plants. CO 3 - To apply their physical and biochemical knowledge to evaluate the processes involved in photosynthesis. CO 4 - To analyze the various processes involving in water uptake and transport in plants. CO 5 - To classify the different plants by the natural, artificial and phylogenetic classification. CO 6 - To interpret the role of growth hormones in plants.
281	BC17S1	Self Learning Course - Plant Resource Utilization	<input checked="" type="checkbox"/>				PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education PO 6 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 9 - To integrate the related topics from other branches of science to carry out projects to have a successful career.	CO 1 - To acquire knowledge in plant resources. CO 2 - To gain interest in value added crops.
282	BC1741	Major Core IV – Plant Ecology and Phytogeography	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education PO 6 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 9 - To integrate the related topics from other branches of science to carry out projects to have a successful career.	CO 1 - To realise the vast expansion of biomass systems, both for "green energy" and for other renewable resources. CO 2 - To understand the nutritive value of single cell protein and learnt the techniques of producing SCP from microorganisms. CO 3 - To recognize the need to protect and conserve mother nature. CO 4 - To find ways to have sustainable management of natural resources. CO 5 - To gain awareness of career options in the biological sciences.

283	BC1742	Major - Elective II (a) Biological Resources	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.</p> <p>PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education</p> <p>PO 6 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To develop a strong and competent knowledge in Botany.</p> <p>PSO 2 - To apply the contextual knowledge in Botany to improve the supply of medicines, food, fibers and other plant products to the society.</p> <p>PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.</p> <p>PSO 9 - To integrate the related topics from other branches of science to carry out projects to have a successful career.</p>	<p>CO 1 - To list the different constituents of food, methods of cooking and preservation .</p> <p>CO 2 - To demonstrate the side effects of food additives.</p> <p>CO 3 - To prepare value-added products of milk and vegetables.</p> <p>CO 4 - To explain the industrial production of beer, ethyl alcohol, vinegar and amylase.</p> <p>CO 5 - To design balanced diet.</p> <p>CO 6 - To test for detection of food adulterants and colourants.</p>
284	BC1743	Major - Elective II (b) Food Science	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.</p> <p>PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education</p> <p>PO 6 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To develop a strong and competent knowledge in Botany.</p> <p>PSO 2 - To apply the contextual knowledge in Botany to improve the supply of medicines, food, fibers and other plant products to the society.</p> <p>PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.</p> <p>PSO 9 - To integrate the related topics from other branches of science to carry out projects to have a successful career.</p>	<p>CO 1 - To record the biodiversity taxa at different region.</p> <p>CO 2 - To assemble with any biodiversity management organizations at national or international level.</p> <p>CO 3 - To organize biodiversity awareness programmes.</p> <p>CO 4 - To apply the knowledge on conservation in day to day life.</p> <p>CO 5 - To assess the value of biodiversity through valid methodologies.</p> <p>CO 6 - To categorize the hot spots of biodiversity in national level.</p>
285	BC1744	Major - Elective II (c) Biodiversity and Human Welfare	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.</p> <p>PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education</p> <p>PO 6 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To develop a strong and competent knowledge in Botany.</p> <p>PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.</p>	<p>CO 1 - To record the locally available hydrophytes, xerophytes and halophytes.</p> <p>CO 2 - To construct a quadrat for vegetative analysis.</p> <p>CO 3 - To demonstrate the measurement of soil permeability.</p> <p>CO 4 - To practice the preparation of plant material for microscopic observation.</p> <p>CO 5 - To distinguish the phytogeography models.</p> <p>CO 6 - To develop practical skills to visit field for individual/group work.</p>
286	BC17P4	Major Practical IV - Plant Ecology and Phytogeography	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To develop a strong and competent knowledge in Botany.</p> <p>PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.</p>	<p>CO 1 - To recognize the feature of plant anatomy: at the cell, tissue and organ level.</p> <p>CO 2 - To know the complexity of xylem and phloem.</p> <p>CO 3 - To compare and contrast the organization of mitotic and meiotic cell division in plant and to learn about cell cycle.</p> <p>CO 4 - To compare the structure and functions of living and non - living inclusions in plants.</p> <p>CO 5 - To understand about the difference between the primary and secondary structures of plant.</p>
287	BA1741	Allied II – Theory : Cell Biology and Plant Anatomy	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p> <p>PO 6 - To impart communicative skills and ethical values.</p>	<p>PSO 1 - To develop a strong and competent knowledge in Botany.</p> <p>PSO 6 - To communicate appropriately and effectively in science and also interact productively with people from diverse background.</p>	<p>CO 1 - To dissect the floral parts of the prescribed families and explain with appropriate diagrams.</p> <p>CO 2 - To identify electron micrographs of the cell organelles and tissues.</p> <p>CO 3 - To draw the anatomical structures of plant parts. detect the tissues and stomatal types.</p> <p>CO 4 - To set-up the experiments to show physiological process. <u>examine the non living inclusions.</u></p>
288	BA17P2	Allied II – Practical: Taxonomy, Anatomy, Plant Physiology, Cell Biology and Plant Anatomy	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To develop a strong and competent knowledge in Botany.</p> <p>PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.</p>	<p>CO 1 - To identify the levels of structure in proteins and describe its biological roles.</p> <p>CO 2 - To understand the structure, properties and fundamentals of biomolecules.</p> <p>CO 3 - To demonstrate thermodynamic principles in biological energy conversion.</p> <p>CO 4 - To analyze enzyme activity.</p> <p>CO 5 - To compare the structure of saturated fatty acids with unsaturated fatty acids.</p> <p>CO 6 - To analyse the biological data and interpret data with the hypothesis.</p>

289	BC1752	Self Learning Course - Algal Biotechnology	<input checked="" type="checkbox"/>				<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.</p> <p>PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education</p> <p>PO 6 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To develop a strong and competent knowledge in Botany.</p> <p>PSO 6 - To communicate appropriately and effectively in science and also interact productively with people from diverse background.</p>	<p>CO 1 - To identify the levels of structure in proteins and describe its biological roles.</p> <p>CO 2 - To understand the structure, properties and fundamentals of biomolecules.</p> <p>CO 3 - To demonstrate thermodynamic principles in biological energy conversion.</p> <p>CO 4 - To analyze enzyme activity.</p> <p>CO 5 - To compare the structure of saturated fatty acids with unsaturated fatty acids.</p> <p>CO 6 - To analyse the biological data and interpret data with the hypothesis.</p>
290	BC1751	Major Core V - Taxonomy and Economic Botany	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.</p> <p>PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education</p> <p>PO 6 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To develop a strong and competent knowledge in Botany.</p> <p>PSO 6 - To communicate appropriately and effectively in science and also interact productively with people from diverse background.</p>	<p>CO 1 - To be familiarize with basic information about microbiology and microbiologists.</p> <p>CO 2 - To explore the role and relevance of viruses and bacteria in the field of microbiology.</p> <p>CO 3 - To work safely, competently and effectively in the laboratory in a team.</p> <p>CO 4 - To undertake careers in microbiology through the hands -on training techniques they learnt.</p> <p>CO 5 - To recognize the signs and symptoms of diseases and the major issues that arise due to such infections.</p>
291	BC1752	Major Core VI - Biochemistry and Biophysics		<input checked="" type="checkbox"/>			<p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p> <p>PO 6 - To impart communicative skills and ethical values.</p>	<p>PSO 1 - To develop a strong and competent knowledge in Botany.</p> <p>PSO 6 - To communicate appropriately and effectively in science and also interact productively with people from diverse background.</p>	<p>CO 1 - To understand the scope of horticulture.</p> <p>CO 2 - To develop creative skills for establishment of an orchard.</p> <p>CO 3 - To explain the propagation methods by seeds, cuttings, grafting, budding and layering.</p> <p>CO 4 - To apply the knowledge of horticultural techniques to develop ornamental gardens.</p> <p>CO 5 - To recall the special techniques in plant breeding.</p> <p>CO 6 - To analyze the employability skills in the field of horticulture.</p>
292	BC1753	Major Core VII - Microbiology and Plant Pathology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.</p> <p>PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education</p> <p>PO 6 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To develop a strong and competent knowledge in Botany.</p> <p>PSO 6 - To communicate appropriately and effectively in science and also interact productively with people from diverse background.</p>	<p>CO 1 - To list the different agroforestry technologies and identify ways to classify them into relevant groups.</p> <p>CO 2 - To review the types and distribution of forest with reference to India.</p> <p>CO 3 - To apply forest management principles and practice them in land management.</p> <p>CO 4 - To analyze recreational forestry including Botanical gardens, Zoos, National Parks and Sanctuaries in recreation/conservation of wildlife.</p> <p>CO 5 - To recognize the valuable forest products and the methods of conservation.</p> <p>CO 6 - To report the possible man - made calamities of the forest.</p>
293	BC1754	Major - Elective III (a) Horticulture and Plant Breeding	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.</p> <p>PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education</p> <p>PO 6 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To develop a strong and competent knowledge in Botany.</p> <p>PSO 6 - To communicate appropriately and effectively in science and also interact productively with people from diverse background.</p>	<p>CO 1 - To understand the basic units of measurement.</p> <p>CO 2 - To determine the basic principles and applications of instrument used in biology.</p> <p>CO 3 - To practice and employ in the field of biological techniques.</p> <p>CO 4 - To demonstrate use the techniques, skills, tools necessary for practice.</p> <p>CO 5 - To discuss the structure and functions of biological Techniques.</p> <p>CO 6 - To operate the biological techniques properly, work safely, competently and effectively in the laboratory in a team.</p>

294	BC1755	Major - Elective III (b) Forestry	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries. PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To identify the plant parts from commonly available plants. CO 2 - To identify the family and describe the plant parts and floral parts. CO 3 - To record the economically important products from the prescribed families in the syllabus. CO 4 - To estimation, titration, separation and separation of biomolecules. CO 5 - To identify spotters (i.e. Photos/Models/Instruments). CO 6 - To demonstrate the qualitative and quantitative analysis of Glucose, Starch, Protein and Lipids.
295	BC1756	Major - Elective III (c) Biological Techniques		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education PO 6 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To understand the importance of the features of garden. CO 2 - To apply the acquired knowledge and practical skill in developing ornamental garden. CO 3 - To understand the process of plant growth. CO 4 - To recall the methods of harvesting, packing and marketing of cut flowers. CO 5 - To create aesthetic arrangement of dry flower decoration. CO 6 - To prepare the students for a job in plant nursery or commercial grower or floral whole sale.
296	BC17P5	Major Practical V - Taxonomy and Economic Botany & Biochemistry and Biophysics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 2 - To apply the contextual knowledge in Botany to improve the supply of medicines, food, fibers and other plant products to the society. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations.	CO 1 - To identify the plant parts from commonly available plants. CO 2 - To identify the family and describe the plant parts and floral parts. CO 3 - To record the economically important products from the prescribed families in the syllabus. CO 4 - To estimation, titration, separation and separation of biomolecules. CO 5 - To identify spotters (i.e. photos/models/instruments). CO 6 - To demonstrate the qualitative and quantitative analysis of Glucose, Starch, Protein and Lipids.
297	BSK175	Skill Based Course (*SBC) – Floriculture	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 9 - To integrate the related topics from other branches of science to carry out projects to have a successful career.	CO 1 - To acquaint the core concepts and fundamentals of plant biotechnology. CO 2 - To develop competency on different types of plant tissue culture. CO 3 - To understand the mechanisms of genetic information. CO 4 - To get an insight of chromosome abnormalities and related human syndromes. CO 5 - To develop skills to become employable as professionals in Biotechnology Industries.
298	BC1761	Major Core VIII - Genetics, Biostatistics and Bioinformatics	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries. PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 9 - To integrate the related topics from other branches of science to carry out projects to have a successful career.	CO 1 - To understand water relation of plants with respect to various physiological processes. CO 2 - To explain efficiency symptoms of macro and micronutrients in plants. CO 3 - To relate complementary metabolic pathways such as photosynthesis and respiration in energy acquisition. CO 4 - To analyse nitrogen metabolism and its significance. CO 5 - To assess dormancy and germination in plants.
299	BC1762	Major Core IX - Biotechnology and Molecular biology		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries. PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 9 - To integrate the related topics from other branches of science to carry out projects to have a successful career.	CO 1 - To describe the types of marine habitat and their relationship with environment. CO 2 - To compare the threats and conservation of seaweeds and sea grasses. CO 3 - To evaluate how natural events and human activities affect coastal habitats. CO 4 - To create a broad knowledge about themarine products and their economic value. CO 5 - To describe the role of mangroves in conservation of marine flora and fauna.



300	BC1763	Major Core X - Plant Physiology and Metabolism		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries. PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 9 - To integrate the related topics from other branches of science to carry out projects to have a successful career.	CO 1 - To understand the concept of organic farming and its importance. CO 2 - To apply the knowledge of organic nutrients and organic pest management in farming. CO 3 - To demonstrate the use of biocontrol agents, botanicals and other plant growth promoting preparations in organic farming. CO 4 - To learn the techniques of different concepts of composting methods. CO 5 - To empower the employment opportunity of rural youth at village level in organic market as organic growers, stakeholders, and entrepreneurs.
301	BC1764	Major - Elective III (a) - Marine Botany	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries. PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 9 - To integrate the related topics from other branches of science to carry out projects to have a successful career.	CO 1 - To recognize the values of natural heritage. CO 2 - To create environmental and cultural awareness to develop sustainable eco-tourism spots. CO 3 - To understand the impact of ecotourism on economy, socio-economic and environment of a country. CO 4 - To appreciate and admire the varieties of tourist centres. CO 5 - To evaluate the role of local community in ecotourism.
302	BC1765	Major - Elective III (b) - Organic Farming	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education PO 6 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 6 - To communicate appropriately and effectively in science and also interact productively with people from diverse background.	CO 1 - To understand and identify the locally available common plants. CO 2 - To identify the family and describe the plant parts and floral parts. CO 3 - To record the economically important products from the prescribed families in the syllabus. CO 4 - To prepare buffer solution for biological and biotechnological experiments. CO 5 - To estimate and compare the biomolecules quantitatively. CO 6 - To identify spotters (i.e., Photos/Models/Instruments) related to biochemistry and biophysics. CO 7 - To do qualitative analysis of glucose, starch, protein and lipids.
303	BC1766	Major - Elective III (c) - Ecotourism		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment. PO 6 - To impart communicative skills and ethical values.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 4 - To create green environment to protect nature for future sustenance. PSO 6 - To communicate appropriately and effectively in science and also interact productively with people from diverse background.	CO 1 - To identify the different stages of mitosis from the root tip squash of Onion. CO 2 - To solve genetic problems related to monohybrid, dihybrid ratio and interaction of genes. CO 3 - To interpret experimental data using biostatistics. CO 4 - To identify spotters (Photos/Models). CO 5 - To be familiar with sterilization techniques. CO 6 - To demonstrate Preparation of MS medium. CO 7 - To analyse PCR Technique: Southern and Northern Blotting technique.
304	BC17P6	Major Practical VI - Genetics, Biostatistics & Biotechnology and Molecular Biology		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 2 - To apply the contextual knowledge in Botany to improve the supply of medicines, food, fibers and other plant products to the society. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations. PSO 9 - To integrate the related topics from other branches of science to carry out projects to have a successful career.	CO 1 - To identify the different stages of mitosis from the root tip squash of onion. CO 2 - To demonstrate experiments and interpret experimental data using biostatistics. CO 3 - To identify spotters (i.e. Photos/Models/Instruments). CO 4 - To solve genetic problems. CO 5 - To understand the sterilization technique and preparation of MS medium.
305	BC17P7	Major Practical VII - Microbiology and Plant Pathology & Plant Physiology and Metabolism	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To develop a strong and competent knowledge in Botany. PSO 2 - To apply the contextual knowledge in Botany to improve the supply of medicines, food, fibers and other plant products to the society. PSO 3 - To understand the basic professional skills through various laboratory technical training, to analyze the relevant biological situations. PSO 9 - To integrate the related topics from other branches of science to carry out projects to have a successful career.	CO 1 - To demonstrate and interpret the results to physiology experiments. CO 2 - To identify the disease causing microbes. CO 3 - To apply sterilization technique and prepare sterile bacterial culture media. CO 4 - To detect Coliform bacteria in water samples. CO 5 - To identify the spotters. CO 6 - To know the importance of pasteurization through field visit.

306	PB1711	Core I - Plant Diversity I - Algae, Fungi, Lichens and Bryophytes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To explicate the role of microbes – friend and foe. PO 6 - To utilize the obtained scientific knowledge to create eco - friendly environment.	PSO 1 - To explicate the role of microbes- friend and foe. PSO 3 - To evaluate ecological interconnectedness of life on earth.	CO 1 - To identify the algae found in water bodies. CO 2 - To understand the importance of different groups of thallophytes and their diversity. CO 3 - To interpret the life history of different thallophytic members. CO 4 - To evaluate the immense role of algae to human. CO 5 - To detect the phytochemicals in thallophytes. CO 6 - To prepare herbarium for algae.
307	PB1712	Core II - Microbiology, Immunology and Plant Pathology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To explicate the role of microbes – friend and foe. PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL	PSO 1 - To explicate the role of microbes- friend and foe.. PSO 2 - To apply fundamental mathematical tools and physical principles in analysing biological situations.	CO 1 - To understand the basic structure and growth techniques of different microorganisms. CO 2 - To apply some modern techniques to detect antigen and antibodies. CO 3 - To identify and treat the pathogens on economically important plants. CO 4 - To evaluate the role of antimicrobial drugs and its resistance. CO 5 - To analyze the bacteria present in milk, soil and water. CO 6 - To construct a protocol for identification of Gram positive and Gram negative bacteria.
308	PB1713	Core III - Developmental Botany	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To explicate the role of microbes – friend and foe. PO 6 - To utilize the obtained scientific knowledge to create eco - friendly environment.	PSO 1 - To explicate the role of microbes- friend and foe. PSO 8 - To integrate the knowledge of botany in a global, economic, environmental, and societal context for sustainable development.	CO 1 - To understand an over view of the basic concepts of developmental botany. CO 2 - To determine the phylogenetic trends and specialization of xylem and phloem. CO 3 - To describe the anomalous secondary growth in Bougainvillea, Bignonia, Achyranthes, and Dracaena. CO 4 - To analyze the properties of wood. CO 5 - To categorize the types of embryo sac. CO 6 - To understand the barriers of fertilization. CO 7 - To explain the structural changes in seed development.
309	PB1714	Elective I - (a) Marine Biology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To explicate the role of microbes – friend and foe. PO 6 - To utilize the obtained scientific knowledge to create eco - friendly environment.	PSO 1 - To explicate the role of microbes- friend and foe. PSO 3 - To evaluate ecological interconnectedness of life on earth.	CO 1 - To understand the potentiality of marine diversity. CO 2 - To recall the usage of different marine products. CO 3 - To construct a protocol for sampling and cultivating marine organisms. CO 4 - To analyse the different types of pollution in marine environment. CO 5 - To detect different bioactive compounds from marine organisms. CO 6 - To relate the structure, reproduction and ecological roles of mangroves, sea grasses, corals and salt marsh plants.
310	PB1714	Elective I - (b) Cell Biology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To explicate the role of microbes – friend and foe. PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL	PSO 1 - To explicate the role of microbes- friend and foe. PSO 3 - To evaluate ecological interconnectedness of life on earth.	CO 1 - To relate various cell cycles in cell organelles. CO 2 - To apply laws of thermodynamics in biological systems. CO 3 - To understand the principle and types of biosensor. CO 4 - To compare the genome organization of chloroplast and mitochondria. CO 5 - To practice the technical use of different modern instruments.
311	PB17P1	Practical I - Plant Diversity I – Algae, Fungi and Bryophytes; Microbiology, Immunology and Plant Pathology; Developmental Botany					PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL PO 6 - To utilize the obtained scientific knowledge to create eco - friendly environment.	PSO 1 - To explicate the role of microbes- friend and foe. PSO 6 - To apply the acquired conceptual knowledge by connecting disciplinary and interdisciplinary aspects of Botany.	CO 1 - To micropreparation and specimen identification of thallophytes. CO 2 - To identification of cryptogams on the basis of morphological characters. CO 3 - To differentiate gram positive and gram negative bacteria. CO 4 - To examination of bacteria by biochemical characterization. CO 5 - To study on ovule modifications and wall patterns of pollen grains.
312	PB1721	Core IV - Plant Diversity II - Pteridophyta, Gymnosperms and Palaeobotany	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL. PO 6 - To utilize the obtained scientific knowledge to create eco - friendly environment.	PSO 1 - To explicate the role of microbes- friend and foe. PSO 2 - To apply fundamental mathematical tools and physical principles in analysing biological situations.	CO 1 - To understand the life cycle and major evolutionary trends of non – flowering plants. CO 2 - To recognize and identify the non-flowering plants. CO 3 - To analyze the phylogenetic inter-relationship between Pteridophytes and Gymnosperms. CO 4 - To compare the evolution of gametophytes and sporophytes of Pteridophytes. CO 5 - To determine the geological age of fossils. CO 6 - To collect the fossils and record their habits.
313	PB1722	Core V - Research Methodology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms. PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL	PSO 1 - To explicate the role of microbes- friend and foe. PSO 7 - To pursue independent study and demonstrate awareness for lifelong learning and professional development.	CO 1 - To understand some basic concepts of research and its methodologies. CO 2 - To define appropriate research problem and parameters. CO 3 - To organize and conduct research systematically. CO 4 - To apply computer skills in research. CO 5 - To explain the principles and working mechanisms of various instruments. CO 6 - To implement biological data in solving biological problems.

314	PB1723	Core VI - Biochemistry and Biophysics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL. PO 7 - To prepare expressive, ethical and responsible citizens with proven expertise.	PSO 1 - To explicate the role of microbes-friend and foe. PSO 9 - To use the techniques, skills and modern technology necessary to communicate effectively with professional and ethical responsibility.	CO 1 - To understand the structure and functions different biomolecules. CO 2 - To apply the basic principles and concepts of thermodynamics in biological systems. CO 3 - To propose a protocol for purification of proteins. CO 4 - To demonstrate the mechanism of enzyme action. CO 5 - To compare denaturation and re-naturation of proteins. CO 6 - To understand the significance of energy currency in biology.
315	PB1724	Elective I - (a) Medicinal Botany and Pharmacognosy	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To relate the theory and practical knowledge to solve the problems of the society. PO 7 - To prepare expressive, ethical and responsible citizens with proven expertise.	PSO 1 - To explicate the role of microbes-friend and foe. PSO 4 - To integrate theoretical and practical knowledge to develop new drugs.	CO 1 - To identify the traditional systems of medicines in terms of Siddha, Ayurvedha, and Unani. CO 2 - To describe the conservation of medicinal plants –in situ and ex situ. CO 3 - To summarize the methods that extract oil from Eucalyptus, Cymbopogon, Rose, and Santalum. CO 4 - To understand the extraction procedures for withaonalides, hyoscyamine, vinblastine. CO 5 - To categorize the drugs in terms of morphological, taxonomical, pharmacological, and chemical. CO 6 - To analyze crude drugs both qualitatively and quantitatively.
316	PB1724	Elective I - (b) Medicinal Plants and Ethnobotany	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL PO 5 - To carry out internship programme and research projects to develop scientific skills and innovative ideas.	PSO 1 - To explicate the role of microbes-friend and foe. PSO 5 - To experience in seeking external funds for their research from a diversity of resources.	CO 1 - To categorize major and minor ethnic groups of Kanyakumari and their lifestyles. CO 2 - To distinguish between forest and ethnic groups. CO 3 - To understand the significance of tribal medicine. CO 4 - To differentiate indigenous medicines of traditional medicine, Ayurvedha, Siddha, and Unani. CO 5 - To classify, analyze and evaluate drugs. CO 6 - To explain economic potential of phytomedicine and potential drug yielding plants. CO 7 - To estimate different groups of biodynamic compounds.
317	PB17P2	Practical II - Plant Diversity – II - Pteridophyta, Gymnosperms and Paleobotany; Research Methodology and Biochemistry and Biophysics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 5 - To carry out internship programme and research projects to develop scientific skills and innovative ideas. PO 6 - To utilize the obtained scientific knowledge to create eco - friendly environment.	PSO 1 - To explicate the role of microbes-friend and foe. PSO 8 - To integrate the knowledge of botany in a global, economic, environmental, and societal context for sustainable development.	CO 1 - To micropreparation and specimen identification of vascular cryptogams. CO 2 - To identification of Pteridophytes and Gynospems based on their anatomical features. CO 3 - To determination of km and Pka values. CO 4 - To estimation of macromolecules. CO 5 - To quantitative analysis of secondary metabolites. CO 6 - To analyze different biological data using biostatistics.
318	PB1731	Core VII - Taxonomy of Angiosperms and Economic Botany	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 5 - To carry out internship programme and research projects to develop scientific skills and innovative ideas. PO 7 - To prepare expressive, ethical and responsible citizens with proven expertise.	PSO 1 - To explicate the role of microbes-friend and foe. PSO 2 - To apply fundamental mathematical tools and physical principles in analysing biological situations.	CO 1 - To differentiate between natural andartificial system of classification CO 2 - To apply sketches to identify the flora. CO 3 - To collect and prepare herbaria for future usetics. CO 4 - To record the rules and regulations framed by ICBN. CO 5 - To interpret biological knowledge in comparing and ranking plants CO 6 - To evaluate of plants by using dichotomous keys
319	PB1732	Core VIII - Genetics and Molecular Biology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To recognize the scientific facts behind natural phenomena. PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL	PSO 1 - To explicate the role of microbes-friend and foe. PSO 4 - To integrate theoretical and practical knowledge to develop new drugs.	CO 1 - To differentiate between natural and artificial system of classification. CO 2 - To apply sketches to identify the flora. CO 3 - To collect and prepare herbaria for future use. CO 4 - To record the rules and regulations framed by ICBN. CO 5 - To interpret biological knowledge in comparing and ranking plants. CO 6 - To evaluation of plants by using dichotomous keys.
320	PB1733	Elective III -(a) Forestry	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 6 - To utilize the obtained scientific knowledge to create eco - friendly environment. PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL	PSO 1 - To explicate the role of microbes-friend and foe. PSO 3 - To evaluate ecological interconnectedness of life on earth.	CO 1 - To categorize the types of forest in Tamilnadu CO 2 - To identify the reasons for degraation of forest CO 3 - To summarize the methods in managing and conserving the forest CO 4 - To understand the objectives, advantages and disadvantages of Agroforestry CO 5 - To determine the role of botanical gardens, zoos, national parks and sanitarries CO 6 - To evaluate the utilization of forest

321	PB1733	Elective III - (b) Horticulture and Plant Breeding (Elective III)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 5 - To carry out internship programme and research projects to develop scientific skills and innovative ideas. PO 6 - To utilize the obtained scientific knowledge to create eco - friendly environment.	PSO 1 - To explicate the role of microbes- friend and foe. PSO 5 - To experience in seeking external funds for their research from a diversity of resources.	CO 1 - To categorize the propagation of horticultural crops. CO 2 - To describe orchard cultivation. CO 3 - To design a kitchen garden in growing vegetables and greens. CO 4 - To state the importance and principles of lawns, topiary and pergolas. CO 5 - To understand the methods involved in hybridization. CO 6 - To evaluate the molecular approaches for crop improvement.
322	PB17P3	Practical III - Taxonomy of Angiosperms and Economic Botany, Genetics and Molecular Biology	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	PO 2 - To relate the theory and practical knowledge to solve the problems of the society. PO 5 - To carry out internship programme and research projects to develop scientific skills and innovative ideas.	PSO 1 - To explicate the role of microbes- friend and foe. PSO 4 - To integrate theoretical and practical knowledge to develop new drugs.	CO 1 - To isolate the DNA from plant materials. CO 2 - To separate biomolecules using spectrophotometry CO 3 - To analyze their floral parts and relate to its corresponding family CO 4 - To solve genetics related problems
323	PB17PR	Research Project	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 5 - To carry out internship programme and research projects to develop scientific skills and innovative ideas. PO 6 - To utilize the obtained scientific knowledge to create eco - friendly environment.	PSO 1 - To explicate the role of microbes- friend and foe. PSO 4 - To integrate theoretical and practical knowledge to develop new drugs.	CO 1 - To explore new areas of research in Botany and allied field of lifescience. CO 2 - To analyze are research problem and construct tools for data collection. CO 3 - To write research reports and present results in the scientific community. CO 4 - To develop skills to serve in Life science related industries and agencies. CO 5 - To develop skills to publish articles in reputed journals.
324	PB17S1	Self Learning Course - Biology for competitive exam – I	<input checked="" type="checkbox"/>				PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL PO 5 - To carry out internship programme and research projects to develop scientific skills and innovative ideas.	PSO 1 - To explicate the role of microbes- friend and foe. PSO 3 - To evaluate ecological interconnectedness of life on earth.	CO 1 - To relate the physical and chemical process occurring in plants. CO 2 - To understand the molecular and metabolic mechanisms of plants. CO 3 - To generalize a minor research using their theory knowledge. CO 4 - To examine, compare and conclude the stressed and stress free plants. CO 5 - To measure the biological mechanisms that takes place inside the plants. CO 6 - To design a protocol for plant regeneration under aseptic condition.
325	PB1741	Core IX - Plant Physiology and Metabolism	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL PO 7 - To prepare expressive, ethical and responsible citizens with proven expertise.	PSO 1 - To explicate the role of microbes- friend and foe. PSO 9 - To use the techniques, skills and modern technology necessary to communicate effectively with professional and ethical responsibility.	CO 1 - To categorize the types of forests in Tamilnadu. CO 2 - To identify the reasons for degradation of forest. CO 3 - To summarize the methods in managing and conserving the forest. CO 4 - To understand the objectives, advantages and disadvantages of agroforestry. CO 5 - To determine the role of botanical gardens, zoos, national parks, and sanctuaries. CO 6 - To evaluate the utilization of forest.
326	PB1742	Core X - Environment and Conservation Biology		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL PO 6 - To utilize the obtained scientific knowledge to create eco - friendly environment.	PSO 1 - To explicate the role of microbes- friend and foe. PSO 4 - To integrate theoretical and practical knowledge to develop new drugs.	CO 1 - To understand the scope and importance of ecosystem. CO 2 - To distinguish the difference between hydrosere and xerosere. CO 3 - To list out the various food chains in ecosystem. CO 4 - To implement the mode of studying vegetation. CO 5 - To understand the importance of conservation strategies.
327	PB1743	Core XI - Applied Biotechnology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL PO 7 - To prepare expressive, ethical and responsible citizens with proven expertise.	PSO 1 - To explicate the role of microbes- friend and foe. PSO 9 - To use the techniques, skills and modern technology necessary to communicate effectively with professional and ethical responsibility.	CO 1 - To understand the importance of biotechnology and design a plant tissue culture laboratory. CO 2 - To differentiate batch, continuous and fed batch culture. CO 3 - To evaluate the pros and cons of Transgenic plants. CO 4 - To recall the different aspects of pharmaceuticals. CO 5 - To apply different databases in biological sciences.
328	PB1744	Elective IV - (a) Industrial Microbiology		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 6 - To utilize the obtained scientific knowledge to create eco - friendly environment. PO 7 - To prepare expressive, ethical and responsible citizens with proven expertise.	PSO 1 - To explicate the role of microbes- friend and foe. PSO 7 - To pursue independent study and demonstrate awareness for lifelong learning and professional development.	CO 1 - To create protocol for the production of Mushroom. CO 2 - To understand the nutritive value of SCP. CO 3 - To justify the impact of organic fertilizers over synthetic fertilizers. CO 4 - To summarize the aesthetic sense of gardening. CO 5 - To know the different funding agencies.
329	PB1745	Elective IV - (b) Biostatistics and Bioinformatics		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL PO 6 - To utilize the obtained scientific knowledge to create eco - friendly environment.	PSO 1 - To explicate the role of microbes- friend and foe. PSO 2 - To apply fundamental mathematical tools and physical principles in analysing biological situations.	CO 1 - To isolate the DNA from plant materials. CO 2 - To separation of biomolecules using spectrophotometry. CO 3 - To analyse the floral parts and relate to its corresponding family. CO 4 - To solve genetics related problems.

330	PB17P4	Practical IV - Plant Physiology and Metabolism, Environment and Conservation Biology and Applied Biotechnology	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	PO 2 - To relate the theory and practical knowledge to solve the problems of the society. PO 6 - To utilize the obtained scientific knowledge to create eco - friendly environment.	PSO 1 - To explicate the role of microbes- friend and foe. PSO 4 - To integrate theoretical and practical knowledge to develop new drugs.	CO 1 - To analyze DO, BOD and COD of water. CO 2 - To prepare tissue culture media, initiate callus culture, anther culture, pollen culture, etc. CO 3 - To identification of phytoplanktons in water bodies. CO 4 - To evaluate the metabolic reactions in plants. CO 5 - To report on common environmental problems, their consequences and possible solutions.
331	PB17S2	Self Learning Course - Biology for competitive exam – II	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To relate the theory and practical knowledge to solve the problems of the society. PO 6 - To utilize the obtained scientific knowledge to create eco - friendly environment.	PSO 1 - To explicate the role of microbes- friend and foe. PSO 3 - To evaluate ecological interconnectedness of life on earth.	CO 1 - To have a brief knowledge on different areas of Botany. CO 2 - To motivate the students to write competitive examinations.