Programme- B.Sc. CBZ

PROGRAME OUTCOME	COURSE NAME	COURSE CODE	COURSE OUTCOME
❖ .Communicate basic science effectively by written, computational and graphic means. ❖ Create scientific ideas from basic axioms. ❖ Gauge the hypothesis, theories, techniques and proofs provisionally. ❖ Utilize basic science to solve theoretical and applied problems by critical understanding, analysis and synthesis. ❖ Identify applications of science in other	**1. Atomic Structure, Bonding And Hydrocarbons**	**BCBZ-102**	1. Understanding the atomic structure, basics of quantum chemistry and its applications. 2. Explaining theories of chemical bonding and molecular structure. 3. Gathering basic knowledge of organic chemistry. 4. Learning the basic principles of stereochemistry. 5. Illustrate the preparative methods of saturated and unsaturated hydrocarbons.
	2. Core course I (Botany): Biodiversity (Microbes, Algae, Fungi and Archegoniate)	**BCBZ-104**	1. Define and distinguishes various categories of algae, fungi and bryophytes. 2. Identify and differentiate various algae, fungi and microbes found in nature. 3. Explain and compare algae with bryophytes and bryophytes with pteridophytes in relation to their affinities. 4. Describe the uses of algae, fungi, bryophytes and gymnosperm. 5. Select the algae and fungi which help in the improvement of environment.
	3. Non-Chordates	**BCBZ-105**	1. Acquire the broad knowledge of invertebrate group of animals. 2. Classify the animal world. 3. Understand the general features of different phyla of invertebrates.

disciplines and in the real-world, leading to enhancement of career prospects in a plethora of fields and research.			4. Understand the general morphology and anatomy of non-chordates.
			5. Identify the specimens of different groups of non-chordates.
	4. Chemical Energetics, Equilibria & Organic Chemistry	**BCBZ-202**	1. Understanding the thermodynamic laws, principles of thermochemistry and chemical equilibrium.
			2. Learning the solubility of ionic compounds and their solution properties.
			3. Illustrate the preparative methods of simple aromatic compounds.
			4. Explaining the preparation and reaction mechanism of alkyl and aryl halides.
			5. Preparation and reaction chemistry aliphatic and aromatic phenols, ethers.
	5. Core Course II (Botany): Plant Ecology and Taxonomy	**BCBZ-204**	1. Define various component of environment and ecosystem.
			2. Identify and differentiate plants which belong to dicot and monocot families.
			3. Explain the basic principles of classification of angiosperm plants.
			4. Demonstrate structure and functions of ecosystem, food chain and food web.
			5. Analyze and discuss plant community and succession.
	6. **Diversity of Proto-chordates and Lower Chordates**	**BCBZ-205**	1. Understand the diversity of Lower Chordates.
			2. Identify and classify the animals.
			3. Apply the knowledge of economic importance in industries to get the valuable things.
	7. **Solutions Electrochemistry & Organic Chemistry**	**BCBZ-301**	1. To have a comprehensive knowledge about Chemistry of halogenated hydrocarbons**.**
			2. To understand the preparation and properties of alcohols, phenols, ethers and epoxides.
			3. Understanding the concepts of carbonyl compounds**.**

			4. Formulate the preparation and reaction of carboxylic acids and its derivatives.
	8. **Basic Analytical Chemistry**	**BCBZ-302S**	1. Able to analyze soil.
			2. Know the water analysis and quality of food products.
			3. Able to apply various chromatographic techniques.
			4. Know the Chemistry of cosmetics.
			5. Able to handle the possible analytical instruments.
	9. **Core Course III (Botany) Plant Anatomy and Embryology**	**BCBZ-304**	1. Define various types of simple and complex tissues
			2. Identify and differentiate plants which belong to dicot and monocot families.
			3. Explain the basic adaptive and protective systems in angiospermic plants.
			4. Demonstrate structure and functions of endosperm and their relationship with embryo
			5. Discuss about the apomixis and polyembryony with their practical applications.
	10. **Skill Enhancement Course I (Botany): Herbal Technology**	**BCBZ-304S**	1. Understand role of medicinal plants, their cultivation , harvesting, processing, storage, marketing and utilization.
			2. Understand uses of herbs in curing various ailments.
			3. Explain phytochemistry of medicinal plants.
			4. Diagnose drug adulteration and drug evaluation.
			5. Micropropogate and culture medicinal plants in lab.
	11. **Diversity of Higher Chordates**	**BCBZ-305**	1. Acquire the knowledge of animal world.
			2. Identify and classify the higher chordates
			3. Describe origin and development of chordates
			4. To deduce the idea and concept that the chordates gradually evolve from its primitive condition to evolved one.

			5. Apply the knowledge of fossils in archeological studies
	12. **Medical Diagnostics**	**BCBZ-305S**	1. Analyze the blood composition, D.L.C., Platelet count, E.S.R. and P.C.V.
			2. Understand the analysis of urine- physical characteristics and abnormal constituents.
			3. Understand the causes, types, symptoms, diagnosis and prevention of infectious and non-infectious diseases.
			4. Understand the types of tumor's and able to detect and metastasis the tumor.
	13. **Coordination Chemistry, States Of Matter & Chemical Kinetics**	**BCBZ-402**	1. Acquiring knowledge of phase equilibrium.
			2. To understand the concepts of Chemical kinetics.
			3. Study about catalysis.
			4. Acquiring knowledge about the surface Chemistry.
	14. **Fuel Chemistry And Chemistry of Cosmetics And Perfumes**	**BCBZ-402S**	1. Able to know the Chemistry of fuels.
			2. Ability to know the petroleum products and industry
			3. Able to know various cosmetics & perfumes.
			4. Ability to prepare cosmetics & perfumes.
	15. **Core Course IV (Botany): Plant Physiology and Metabolism**	**BCBZ-404**	1. Define various types of pigments and nutrients.
			2. Identify the growth promoter nutrients and hormones in plants.
			3. Explain the basic process of plant physiology.
			4. Demonstrate the process of photoperiodism and vernalization.
			5. Discuss about the biological nitrogen fixation and their role in plants.
	16. **Skill Enhancement Course II (Botany):Plant Diversity and Human Welfare**	**BCBZ-404S**	1. Understand the role of diversity of plants and microbes and their uses.
			2. Understand causes of loss of biodiversity and its management.

			3. Understand government acts and bodies for the conservation of bodies.
			4. Explain and apply process of conservation of biodiversity.
			5. Explain role of plants in relation to Human Welfare.
	17. **Physiology and Biochemistry**	**BCBZ-405**	1. Understand the structure of neuron and mechanism of conduction of impulse.
			2. Understand physiology of digestion and process of metabolism of different constituents of food.
			3. Define the pulmonary ventilation, respiratory volumes and capacities.
			4. Describe the composition of blood, structure of heart, conduction of the cardiac impulse and cardiac cycle.
			5. Demonstrate the structure of nephron and mechanism of urine formation.
			6. Illustrate the physiology of male and female reproduction and hormonal control of spermatogenesis and menstrual cycle.
			7. Understand the structure and functions of pituitary, thyroid, parathyroid, pancreas and adrenal glands.
			8. Differentiate between structural anatomy of different organs and glands of mammals.
	18. **Apiculture**	**BCBZ-405S**	1. Understand the history, classification and biology of honey bees.
			2. Understand the rearing of bees and its diseases and enemies.
			3. Understand economy of bee keeping and entrepreneurship in Apiculture.
	19. **Polymer Chemistry**	**BCBZ-502A**	1. Understanding the classification, structure, function and importance of polymers**.**

			2. Examining the kinetics and mechanism of polymerization.
			3. Acquiring the knowledge on nature and physical properties of polymers.
			4. Knowing solubility parameters.
			5. Analyzing the synthesis of different polymers and examining their properties.
	20. **Industrial Chemicals and Environment**	**BCBZ-502B**	1. Bulk synthesis and handling the industrially important hazardous Chemicals.
			2. Understanding the industrial preparation and purification of metals.
			3. Able to explain the environmental impacts of toxic Chemicals in atmosphere.
			4. Able to explain the environmental impacts of toxic Chemicals in hydrosphere.
			5. Correlate the importance of energy sources and their environmental impacts.
	21. **Quantum Chemistry, Spectroscopy & Photochemistry**	**BCBZ-502C**	1. Understand the basic concept of quantum chemistry and its applications.
			2. Applying the Schrodinger equation in simple systems and understanding the quantum mechanical concept of bonding theory.
			3. Gathering the basic knowledge of spectroscopy and its application.
			4. Understanding the principle, application of Electronic, NMR, ESR spectroscopy.
			5. Acquiring knowledge about photochemistry and its applications**.**
	22. **Food Chemistry**	**BCBZ-502S**	1. Able to know about the food adulteration and food poison.

			2. Acquire the knowledge on food additives and packaging of foods**.**
			3. Able to understand about the food preservation methods.
			4. Know the Chemistry of cosmetics.
			5. Able to know about chemistry of carbohydrates, proteins and amino acids.
	23. **Discipline Specific Elective I (Botany): Cell and Molecular Biology**	**BCBZ-504A**	1. Define various types of cell organelles and their functions.
			2. Identify the role of enzymes in plant development.
			3. Explain the basic principles of microscopy.
			4. Demonstrate the process of cell cycle with reference to mitosis and meiosis.
			5. Discuss about the SEM and TEM with reference to their applications in plant study.
	24. **Discipline Specific Elective II (Botany): Economic Botany and Biotechnology**	**BCBZ-504B**	1. Define various types of DNA markers and vectors with their functions.
			2. Identify the cereals and legumes which are highly proteinaceous.
			3. Explain the botanical name, family and plant parts used for human welfare.
			4. Demonstrate the process of RDT with reference to their applications in the diagnosis of human disease.
			5. Discuss about the micro propagation with reference to their applications in plant study.
	25. **Discipline Specific Elective III (Botany): Medicinal Botany**	**BCBZ-504C**	1. Define various types of medicines with their functions.
			2. Identify the medicinal plants with their applications.
			3. Explain the botanical name, family and plant parts used for human welfare.
			4. Demonstrate the process of propagation of medicinal plants.

			5. Discuss about the applications of natural products to certain diseases.
	26. **Skill Enhancement Course III (Botany):Mushroom Culture Technology**	**BCBZ-504S**	1. Understand the nutritional and medicinal value of edible mushrooms.
			2. Learn about materials required for the preparation of edible mushrooms.
			3. Learn about cultivation technology of edible mushrooms.
			4. Learn about processing of edible mushrooms.
			5. Explain the types of foods prepared from edible mushrooms.
	27. **Applied Zoology**	**BCBZ-505A**	1. Understand the host-parasite relationship and epidemiology of diseases- tuberculosis, typhoid.
			2. Study the parasitic protozoa and helminthes. To study the economic and medical importance of insects.
			3. Describe the economic and medical importance of insects.
			4. Understand the animal husbandry, poultry farming and fish technology.
			5. Understand practical morphology of parasites of human diseases through permanent slides.
			6. Distinguish the arthropod vectors with the help of specimens.
			7. Demonstrate the identifying feature and economic importance of different insect pests.
	28. **Sericulture**	**BCBZ-505S**	1. Illustrate the types of silkworms, exotic and indigenous races and mulberry and non-mulberry sericulture.
			2. Understand the biology and rearing of silkworms.
			3. Understand the entrepreneurship in sericulture.
	29. **Chemistry of Main Group**	**BCBZ-602A**	1. Understand about the concept of acids and bases.

	Elements		2. Understand about the unique position of hydrogen.
			3. Understanding the periodicity of *s* and *p* block elements.
			4. Understand about the properties of noble gases.
	30. **Organometallics, Bioinorganic Chemistry And Spectroscopy**	**BCBZ-602B**	1. Study the oxidation states of different metals and the properties of metallic compound.
			2. Gain the knowledge about the bonding and structure of organometallic.
			3. Introduce bio-inorganic chemistry and analyze the role of metal ions.
			4. Illustrate the properties of polynuclear, heteronuclear aromatic compounds.
			5. Apply spectroscopic techniques in analyzing the structure of simple organic.
	31. **Molecules of Life**	**BCBZ-602C**	1. Study the classification, structures and properties of carbohydrates**.**
			2. Know the classification and synthetic methods of amino acids, peptides.
			3. Analyze the mechanisms of enzyme and drug actions and study.
			4. Classify the components of nucleic acids and lipids and understand role ofn RNA/DNA.
			5. Understand the concept of energy conversion in biological systems.
	32. **Pesticide chemistry and Pharmaceutical Chemistry**	**BCBZ-602S**	1. Able to know the Chemistry of pesticides.
			2. Ability to analyze pesticides.
			3. Understand the Chemistry of drug molecules.
			4. Ability to apply fermentation techniques.
	33. **Discipline Specific Elective IV (Botany): Analytical Techniques in Plant Sciences**	**BCBZ-604A**	1. Define various terms used in microscopy and biostatistics.
			2. Analyze the characteristics of proteins and nucleic acids.

			3. Explain the formulae of biostatistics with suitable examples.
			4. Demonstrate the process of microscopy, spectrophotometry and chromatography.
			5. Discuss about the applications of different techniques used in plant science.
	34. **Discipline Specific Elective II (Botany): Bioinformatics**	**BCBZ-604B**	1. Define various terms used in the study of Bioinformatics.
			2. Understand the applications of Bioinformatics in Drug discovery and Drug design.
			3. Explain the methods used in biological sequence and molecular phylogeny
			4. Demonstrate the process of biological sequence and molecular phylogeny
			5. Discuss about the applications of Bioinformatics in microbial world and crop improvement.
	35. **Discipline Specific Elective VI (Botany):Research Methodology**	**BCBZ-604C**	1. Define various terms used in biological research specially plant tissue culture.
			2. Clarify the nomenclature used in scientific writing and its presentation.
			3. Explain the terms used in scientific writing with suitable examples.
			4. Demonstrate the process of staining and cytogenetics techniques.
			5. Discuss about the applications of different techniques used in plant science.
	36. **Skill Enhancement Course IV (Botany): Intellectual Property Rights**	**BCBZ-604S**	1. Understand the concept and application of IPR.
			2. Learn about process of obtaining patents and working of patents.
			3. Learn about geographical indicators used in IPR.

			4. Understand rights of researchers, industrialists and farmers in IPR.
			5. Understand information technology related IPR rights.
	37. **Insect, Vectors and Diseases**	**BCBZ- 605**A	1. Describe the general features and morphological features of insects.
			2. Understand the concept of carrier and vectors.
			3. Discuss the vector organisms from Diptera, Siphonaptera, Siphunculata and Hemiptera.
			4. Demonstrate the different kinds of mouth parts of insects.
			5. Analyze the insect vectors through permanent slides and photographs.
	38. **Aquarium Fish Keeping**	**BCBZ-605S**	1. Understand the potential scope of Aquarium Fish Industry as a Cottage Industry, Exotic and Endemic species of Aquarium Fishes.
			2. Describe the biology of aquarium fishes.
			3. Demonstrate the techniques in setting up and maintain the aquarium.