Programme Outcomes and Course Outcomes

Bachelor of Science (B.Sc.)

UTTAR BHARATIYA SANGH'S

MAHENDRA PRATAP SHARADA PRASAD SINGH COLLEGE OF

ARTS, COMMERCE AND SCIENCE

(Affiliated to University of Mumbai) (COLLEGE CODE - 729)

PROGRAMME NAME: B.Sc. (CBZ)

B.Sc. – PROGRAMME OUTCOMES

PO1: To nurture interest in the students for the subject of Botany, Chemistry & Zoology.

PO2: Learners will gain awareness of the basic and modern concepts of Biology.

PO3: To orient the students about the recent environmental issues, challenges, its protection and conservation.

PO4: To impart knowledge about the importance of nutrition and health aspects in man's life.

PO5: To provide the students with practical knowledge along with the theoretical understanding of the topics

B.Sc. – PROGRAMME SPECIFIC OUTCOMES

PSO1: To make the learners aware about the impact of the plant diversity in societal and environmental contexts.

PSO2: To Inculcate good laboratory practices and precautions among students to train them about scientific handling of research equipment & instruments

PSO3: To apply the knowledge of basic science, life sciences and fundamental process of plants to study and analyse any plant form

PSO4: To understand importance of plant diversity for society, health, safety, legal and environmental issues.

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COURSE OUTCOME FOR BACHELOR OF SCIENCE (B.Sc.)

F.Y. B.Sc. – SEMESTER I

After completing the course, the learner will be able to:

COURSE NAME	COURSE CODE	COURSE OUTCOME
BOTANY-I Plant Diversity-I (Theory and Practical)	USBO101 USBOP1	CO1: To understand the diversity among Algae. Characters, systematic position structure, morphology, anatomy and economic position of Algae. To learn about the life cycle pattern of Algae and the useful as well as harmful activities of Algae. CO2: To understand the diversity of Fungi. Know the Economic Importance of Fungi. Mode of nutrition in Fungi. CO3: To understand the morphological diversity of Bryophytes. To understand the structure, life cycle and systematic position and economic importance of the Bryophytes.
BOTANY-II Form and Function-I (Theory and Practical)	USBO102 USBOP1	CO1: To know the different structures of cell and understand the different types of cell organelles. To study the structure and organization of cell membrane. To learn the process of membrane transport and membrane models. CO2: To understand the ecological pyramids and the different types of ecosystems. CO3: To understand the Mendelian Genetics and interactions such as incomplete dominance, codominance, multiple alleles and epistatic and non-epistatic interactions.
CHEMISTRY-I Physical & Inorganic Chemistry (Theory and Practical)	USCH101 USCHP1	CO 1: To gain knowledge about the fundamental concepts of chemistry and applied chemistry.

		CO 2: To learn how to synthesize a chemical compound and perform necessary characterization and analysis in support of the formation of the product by using modern analytical tools and advanced technologies. CO 3: To achieve critical thinking ability to design, carry out, record and analyse the results of chemical reactions. CO 4: To learn about different types of bonding and different types of compounds.
CHEMISTRY-II Organic & Inorganic Chemistry (Theory and Practical)	USCH102 USCHP1	CO1: To learn about the structure of atoms different atomic theories presented in the past. CO2: To understand the stereochemistry of compounds there 3 dimensional structures. CO3: To learn about the periodic table and classifications of elements. CO4: To be able to classify and name the organic compounds of mono and bifunctional compounds**.**
ZOOLOGY-I Diversity of Animal Kingdom-I, Life Processes-I and Ethology (Theory and Practical)	USZO101 USZOP1	CO1: To gain knowledge about the fundamentals of animal sciences, the complex interactions among various living organisms. CO2: To analyse the complex interactions among the various animals of different phyla, their distribution and their relationship with the environment. CO3: To apply the knowledge of internal CO4: To understand the complex evolutionary processes and behaviour of animals.
ZOOLOGY-II Biochemistry-I, Biotechnology-I, Evolution and Biodiversity.	USZO201 USZOP1	CO1: To understands about various concepts of genetics and its importance in human health.

(Theory and Practical)		CO2: To gain knowledge of small-scale industries like sericulture, fish farming, bee keeping, aquaculture, animal husbandry, poultry farm. CO3: To correlate the physiological processes of animals and relationship of organ systems. CO4: To understand the complex evolutionary processes and behaviour of animals
FOUNDATION COURSE-I	UBScFSI.6.1	CO1: To understand overview of Indian Society CO2: To understand the concepts disparity with regards to gender CO3: To gain knowledge about the Indian Constitution and Fundamental Duties CO4: To discuss the political party system of India.

F.Y. B.Sc. – SEMESTER II

After completing the course, the learner will be able to:

COURSE NAME	COURSE CODE	COURSE OUTCOME
BOTANY-I Plant Diversity-I (Theory and Practical)	USBO201 USBOP2	CO1: To understand the morphological diversity of Pteridophytes and Gymnosperms. CO2: To know the evolution of Pteridophytes and Gymnosperms. CO3: To understand the habit of the angiosperm plant body. To learn about the vegetative & reproductive characteristics of the plant. To understand the plant morphology and basic taxonomy.
BOTANY-II Form and Function-I (Theory and Practical)	USBO202 USBOP2	CO1: To know the anatomy of simple and complex tissues. CO2: To know importance and scope of plant physiology. To understand the respiration in higher plants with particular emphasis on aerobic and anaerobic respiration. CO3: To understand the Medicinal Botany and Grandma's pouch.
CHEMISTRY-I Physical & Inorganic Chemistry (Theory and Practical)	USCH201 USCHP2	CO1: To learn different methods of preparation of aliphatic compounds. CO2: To understand difference between different states of matter. CO3: To learn about concepts of acids and bases. CO4: To learn different spectroscopic techniques used for identification of compounds.
CHEMISTRY-II Organic & Inorganic Chemistry (Theory and Practical)	USCH202 USCHP2	CO1: To understand the three-dimensional structures of compounds.

		CO2: To analyse different oxidation and reduction reactions. CO3: To learn about the concept of aromaticity. CO4: To learn about the qualitative and quantitative techniques of analysis of compounds.
ZOOLOGY-I Diversity of Animal Kingdom-II, Life Processes-II and Ethology (Theory and Practical)	USZO201 USZOP2	CO1: To Develops empathy and love towards the animals. CO2: To understands about various concepts of genetics. CO3: To learn about biodiversity and protection of endangered species CO4: To understand the complex interactions among various living organisms.
ZOOLOGY-II Biochemistry-II, Biotechnology-II, Evolution and Biodiversity (Theory and Practical)	USZO202 USZOP2	CO1: To Gain knowledge of small-scale industries like sericulture, fish farming, bee keeping, aquaculture, animal husbandry, poultry farm. CO2: To relate the physical features of the environment to the structure of populations, communities, and ecosystems. CO3: To learn about kingdom Animalia, their classification, evolution embryology, structure, etc. for both living and extinct animals.
FOUNDATION COURSE-II	UBScFSII.6.1	CO1: To understand the concept of globalization, liberalization and privatization CO2: To get knowledge of basic Human Rights CO3: To explain the concept of ecology, importance of environment.

		CO4: To understand the reasons of stress and conflict and learn various methods of managing stress

S.Y. B.Sc. – SEMESTER III

(BOTANY & ZOOLOGY)

After completing the course, the learner will be able to:

COURSE NAME	COURSE CODE	COURSE OUTCOME
BOTANY-I Plant Diversity-II (Theory and Practical)	USBO301 USBOP3	CO1: To learn about division of Phaeophyta, structure of Sargassum. To study class Anthocerotae and Musci. CO2: learners will understand the morphology of flowering plants in detail. To understand the economic importance of different flowering plants. CO3: To understand the modern techniques: Preservation methods, Microscopy, Chromatography and Elecrophoresis to study plant diversity.
BOTANY-II Form and Function-II (Theory and Practical)	USBO302 USBOP3	CO1: To understand the ultra-structures and functions of different cell organelles. CO2: To understand the variation of chromosome structures. To learn about organelle heredity. CO3: To understand the process of replication and protein synthesis.
BOTANY-III Current Trends in Plant Science-I (Theory and Practical)	USBO303 USBOP3	CO1: To study the secondary metabolites of alkaloids, gums and resins, glycosides and tannins. CO2: To study the classification of forests. CO3: To know about the industries based on plant products and biofuels.
ZOOLOGY-I	USZO301	CO1: To Introduce basic terms of genetics and to make understand and

Fundamentals of Genetics, Chromosomes and Heredity, Nucleic acids (Theory and Practical)	USZOP3	apply the Mendelian principles of inheritance. To Understand the concept of multiple alleles, linkage and crossing over. CO2: Learners will understand the structure, types, and classification of chromosomes. Learners would be able to correlate the disorders linked to a particular sex chromosome. CO3: To introduce the concept of sex determination and its types, sex influenced and sex limited genes. CO4: To understand the importance of nucleic acids and the concept of central dogma of molecular biology. The learners would understand and appreciate the regulation of gene expressions.
ZOOLOGY-II Study of Nutrition & Excretion, Respiration & Circulation, Control & Coordination, Locomotion (Theory and Practical)	USZO302 USZOP3	CO1: To introduce the concepts of physiology of nutrition, excretion and osmoregulation. CO2: To expose the learners to various nutritional apparatus, excretory and osmoregulatory structures in different classes of organisms. CO3: To introduce the concepts of physiology of respiration and circulation. CO4: To expose the learners to various locomotory and reproductive structures in different classes.
ZOOLOGY-III Ethology, Parasitology, Economic Zoology (Theory and Practical)	USZO303 USZOP3	CO 1: To equip learners with a sound knowledge of how animals interact with one another and their environment. CO2: To enable the learners to understand different behavioural patterns.

		CO3: To acquaint learners with the concepts of parasitism, their relationship with environment. CO4: To disseminate information on economic aspects of zoology like apiculture, vermiculture, dairy science and to encourage young learners for self-employment.
FOUNDATION COURSE 3	USFC301	CO1: To discuss issues related to human rights violations ecology. CO2: To understand forms of violation of rights caste class disability and current scenario. CO3: To create the importance of creating scientific temper towards technology and its use in everyday life. CO4: To learn environmental concern about causes of disaster and management of disaster.

S.Y. B.Sc. – SEMESTER IV

(BOTANY & ZOOLOGY)

After completing the course, the learner will be able to:

COURSE NAME	COURSE CODE	COURSE OUTCOME
BOTANY-I Plant Diversity-II (Theory and Practical)	USBO401 USBOP4	CO1: To study the general characters of Ascomycete. CO2: To study classification and salient features of Pteridophyte. CO3: To learn and understand classification and economic importance of Gymnosperms.
BOTANY-II Form and Function-II (Theory and Practical)	USBO402 USBOP4	CO1: To study the anatomy & secondary growth in dicot stem and root, mechanical tissue system and types of vascular bundles. CO2: To study the Plant Physiology and Plant Biochemistry. CO3: To understand the Ecology and Environmental Botany. To study the biogeochemical cycle of carbon, nitrogen and water.
BOTANY-III Current Trends in Plant Science-I (Theory and Practical)	USBO403 USBOP4	CO1: To learn about the techniques of horticulture & gardening and types of gardens. CO2: The learner will be introduced to the plant tissue culture. CO3: To learn about Biostatistics and Bioinformatics.
ZOOLOGY-I Origin & evolution of life, Population, genetics &	USZO401 USZOP4	CO1: To impart scientific knowledge to the learner about how life originated and evolved on our planet.

evolution, Scientific Attitude methodology. (Theory and Practical)		CO2: Learner would understand the forces that cause evolutionary changes in natural populations. CO3: Learner would comprehend the mechanisms of speciation, and to distinguish between microevolution, macroevolution and megaevolution. CO4: To inculcate scientific temperament in the learner.The learner will develop qualities such as critical thinking and analysis, the skills of scientific communication.
ZOOLOGY-II Cell Biology, Endomembrane System, Biomolecules. (Theory and Practical)	USZO402 USZOP4	CO1: To give learner acquires insight of transport mechanisms for the maintenance and composition cell. CO2: To acquaint the learner with Ultrastructure of cell organelles and their functions. CO3: To give learner insight into the structure of biomolecules, and their role in sustenance of life. CO4: The learner will realize the importance of biomolecules and their clinical significance.
ZOOLOGY-III Comparative Embryology, Aspects of Human Reproduction, Pollution and its effects on Organism (Theory and Practical)	USZO403 USZOP4	CO1: To acquaint the learner with key concepts of embryology. Learner will be able to appreciate the functional aspects of extra embryonic membranes and classify the different types of placentae. CO2: To make them aware of the causes of infertility, techniques to overcome infertility and the concept of birth control. CO3: Learners will able to understand human reproductive physiology. Learners will become familiar with advances in ART and related ethical issues.

		CO4: To provide a panoramic view of impact of human activities leading to pollution and its implications.
FOUNDATION COURSE-IV	USFC401	CO1: To develop a basic understanding about rights of citizens. CO2: To provide an overview of significant skills required to address competition in career choices.

S.Y. B.Sc. – SEMESTER III

(CHEMISTRY & ZOOLOGY)

After completing the course, the learner will be able to:

COURSE NAME	COURSE CODE	COURSE OUTCOME
CHEMISTRY-I General chemistry (physical, inorganic and organic chemistry) (Theory and Practical)	USCH301 USCHP1	CO1: To learn about Free Energy Functions. CO2: To learn about thermal and photochemical reactions. CO3: To study the complex kinetic reactions. CO4: To learn different types of titrimetric analysis.
CHEMISTRY-II General chemistry (physical, inorganic and organic chemistry) (Theory and Practical)	USCH302 USCHP2	CO1: To understand the general mechanism of aromatic electrophilic substitution with energy profile diagram. CO2: To learn about the configurations of transition metals. CO3: To study about the molecular orbital theory. CO4: To study the reactions and preparation of haloarenes
CHEMISTRY-III Basics of analytical chemistry (Theory and Practical)	USCH303 USCHP3	CO1: To understand Water as a natural resource, physical properties of water, chemical properties of water - auto -ionization and types of reactions in water. CO2: To study Concept and scope of environmental chemistry. Components of environment; Biotic and Abiotic.

		CO3: To study different renewable and non-renewable sources of organic compounds. CO4: To study different types of unit processes in organic chemistry.
ZOOLOGY-I Fundamentals of Genetics, Chromosomes and Heredity, Nucleic acids (Theory and Practical)	USZO301 USZOP3	CO1: To Introduce basic terms of genetics and to make understand and apply the Mendelian principles of inheritance. To Understand the concept of multiple alleles, linkage and crossing over. CO2: Learners will understand the structure, types, and classification of chromosomes. Learners would be able to correlate the disorders linked to a particular sex chromosome. CO3: To introduce the concept of sex determination and its types, sex influenced and sex limited genes. CO4: To understand the importance of nucleic acids and the concept of central dogma of molecular biology. The learners would understand and appreciate the regulation of gene expressions.
ZOOLOGY-II Study of Nutrition & Excretion, Respiration & Circulation, Control & Coordination, Locomotion (Theory and Practical)	USZO302 USZOP3	CO1: To introduce the concepts of physiology of nutrition, excretion and osmoregulation. CO2: To expose the learners to various nutritional apparatus, excretory and osmoregulatory structures in different classes of organisms. CO3: To introduce the concepts of physiology of respiration and circulation. CO4: To expose the learners to various locomotory and reproductive structures in different classes.

ZOOLOGY-III Ethology, Parasitology, Economic Zoology (Theory and Practical)	USZO303 USZOP3	CO1: To equip learners with a sound knowledge of how animals interact with one another and their environment. CO2: To enable the learners to understand different behavioural patterns. CO3: To acquaint learners with the concepts of parasitism, their relationship with environment. CO4: To disseminate information on economic aspects of zoology like apiculture, vermiculture, dairy science and to encourage young learners for self-employment.
FOUNDATION COURSE-III	USFC301	CO1: To discuss issues related to human rights violations ecology. CO2: To understand forms of violation of rights caste class disability and current scenario. CO3: To create the importance of creating scientific temper towards technology and its use in everyday life. CO4: To learn environmental concern about causes of disaster and management of disaster.

S.Y. B.Sc. – SEMESTER IV

(CHEMISTRY & ZOOLOGY)

After completing the course, the learner will be able to:

COURSE NAME	COURSE CODE	COURSE OUTCOME
CHEMISTRY-I General chemistry (physical, inorganic and organic chemistry) (Theory and Practical)	USCH401 USCHP4	CO1: To understand the Factors affecting stability of nucleus. CO2: To understand the basic principles of organic spectroscopy. CO3: To Learn about various types of errors in data analysis. CO4: Identification of organic compound including qualitative and quantitative analysis.
CHEMISTRY-II General chemistry (physical, inorganic and organic chemistry) (Theory and Practical)	USCH402 USCHP5	CO1: Introduction to essential and non-essential elements in biological system. CO2: To learn about the stereochemistry of compounds. CO3: To evaluate different types of chemical reactions of aliphatic and aromatic amines. CO4: To understand the different types of mechanisms that lead to organic products.
CHEMISTRY-III Basics of analytical chemistry (Theory and Practical)	USCH403 USCHP6	CO1: To learn about different sources of water pollution. CO2: To understand different types of metallurgical processes. CO3: learner would understand about the composition of oil fats.

ZOOLOGY-I Origin & evolution of life, Population, genetics & evolution, Scientific Attitude methodology. (Theory and Practical)	USZO401 USZOP4	CO1: To impart scientific knowledge to the learner about how life originated and evolved on our planet. CO2: Learner would understand the forces that cause evolutionary changes in natural populations. CO3: Learner would comprehend the mechanisms of speciation, and to distinguish between microevolution, macroevolution and megaevolution. CO4: To inculcate scientific temperament in the learner.The learner will develop qualities such as critical thinking and analysis, the skills of scientific communication.
ZOOLOGY-II Cell Biology, Endomembrane System, Biomolecules. (Theory and Practical)	USZO402 USZOP4	CO1: To give learner acquires insight of transport mechanisms for the maintenance and composition cell. CO2: To acquaint the learner with Ultrastructure of cell organelles and their functions. CO3: To give learner insight into the structure of biomolecules, and their role in sustenance of life. CO4: The learner will realize the importance of biomolecules and their clinical significance.
ZOOLOGY-III Comparative Embryology, Aspects of Human Reproduction, Pollution and its effects on Organism (Theory and Practical)	USZO403 USZOP4	CO1: To acquaint the learner with key concepts of embryology. Learner will be able to appreciate the functional aspects of extra embryonic membranes and classify the different types of placentae. CO2: To make them aware of the causes of infertility, techniques to overcome infertility and the concept of birth control. CO3: Learners will able to understand human reproductive physiology. Learners will become familiar with advances in ART and related ethical issues.

		CO4: To provide a panoramic view of impact of human activities leading to pollution and its implications.
FOUNDATION COURSE 4	USFC401	CO1: To develop a basic understanding about rights of citizens. CO2: To provide an overview of significant skills required to address competition in career choices.

T.Y. B.Sc. – SEMESTER V

(CHEMISTRY)

After completing the course, the learner will be able to:

COURSE NAME	**COURSE CODE**	**COURSE OUTCOME**
Chemistry-I Physical Chemistry (Theory and Practical)	USCH501 USCHP05	CO1: To learn about different methods of molecular spectroscopy. CO2: To learn about laws of crystallography. CO3: To understand the defects in solids. CO4: To understand the concepts of electrochemistry
Chemistry-II Inorganic Chemistry (Theory and Practical)	USCH502 USCHP05	CO1: To apply the molecular orbital theory for polyatomic molecules. CO2: To understand the concept of superconductivity. CO3: To understand the chemistry of inner transition elements. CO4: To learn about the acid base chemistry.
Chemistry-III Organic Chemistry (Theory and Practical)	USCH503 USCHP06	CO1: To solve the mechanism of the organic reactions. CO2: To understand molecular chirality. CO3: To understand classification sources of carbohydrates. CO4: To do IUPAC nomenclature of biphenyls monocyclic aromatic and non-aromatic compounds.

		CO5: learner will be introduced to hero cyclic compounds.
Chemistry-IV Analytical Chemistry (Theory and Practical)	USCH503 USCHP06	CO1: To learn about treatment of data and sampling. CO2: To study the titrimetric analysis and acid base titrations, precipitation titration. CO3: To learn about methods of separation. CO4: To learn about optical spectroscopy.
Chemistry-V Applied Chemistry Drugs and Dyes (Theory and Practical)	USACDD501 USACDD5P1	CO1: To learn about different types of drugs. CO2: To learn about routes to administration of drugs. CO3: To learn about pharmaco dynamic drugs. CO4: To classify drugs dyes based on their applications.

T.Y. B.Sc. – SEMESTER VI

(CHEMISTRY)

After completing the course, the learner will be able to:

COURSE NAME	**COURSE CODE**	**COURSE OUTCOME**
Chemistry-I Physical Chemistry (Theory and Practical)	USCH601 USCHP07	CO1: To study the basics of quantum chemistry. CO2: To learn about the renewable sources of energy. CO3: To understand the nuclear magnetic resonance spectroscopy.
Chemistry-II Inorganic Chemistry (Theory and Practical)	USCH602 USCHP07	CO1: To study chemistry of coordination complexes and their applications. CO2: To understand the stability of coordination compounds. CO3: To study different types of electronic spectra's. CO4: To learn about organometallic compounds.
Chemistry-III Organic Chemistry (Theory and Practical)	USCH603 USCHP08	CO1: To study different types of organic spectroscopies and their applications. CO2: learner will be introduced to polymers and their properties.

		CO3: To study catalysts and reagents and their selectivity and specificity. CO4: To learn carbon metal bond nature and stability.
Chemistry-IV Analytical Chemistry (Theory and Practical)	USCH604 USCHP08	CO1: To learn about titrimetric analysis. CO2: learner will understand how to handle the analytical data. CO3: To study about the concept of quality and miscellaneous methods.
Chemistry-V Applied chemistry: Drugs And Dyes (Theory and Practical)	USACDD601 USACDD6P1	CO1: To understand the drug discovery and design and development. CO2: To learn about chemotherapeutic drugs. CO3: To classify drugs based upon chemical constitution.

T.Y. B.Sc. – SEMESTER V

(ZOOLOGY)

After completing the course, the learner will be able to:

COURSE NAME	**COURSE CODE**	**COURSE OUTCOME**
ZOOLOGY-I Taxonomy - invertebrates and type study. (Theory and Practical)	USZO501 USZOP05	CO1: To introduce the principles of taxonomy and modern system of classification in animal kingdom with evolution point of view. Learners will apprehend the basis of classification and modern classification up to class of the lower invertebrate animals. CO2: To comprehend the general characters and classification of Kingdom Animalia from Porifera to Nematoda and specific characters of organisms belonging to these phyla. CO3: To introduce basic concepts of classification up to class in animal kingdom from phylum Annelida to Hemichordata and to familiarize with their characters. CO4: To acquaint learners with the details of Sepia as a representative of invertebrate animals.
ZOOLOGY-II	USZO502	CO1: To study the volume and composition of blood,

Haematology and Immunology. (Theory and Practical)	USZOP05	haemorrhage and haematopoiesis. CO2: The learner will be familiar with the terminology used and diagnostic tests performed in a pathological laboratory which approaches in haematological disorders. CO3: The learner shall comprehend the types of immunity and the components of immune system and significant role of immune system in giving resistance against diseases. CO4: The learner shall understand immunopathology and the principles and applications of vaccines and also develop basic understanding of immunology of organ transplantation.
ZOOLOGY-III Histology, Toxicology, Pathology and Bioinformatics. (Theory and Practical)	USZO503 USZOP06	CO1: To familiarize the learner with the cellular architecture of the various organs in the body. Also understand the need and importance of different types of tissues in the vital organs and their functions. CO2: The course will prepare learner to develop broad understanding of the different areas of toxicology. Also develop critical thinking and assist students in preparation for employment in pharmaceutical industry and related areas. CO3: Learner will be familiar with various medical terminology

		pertaining to pathological condition of the body caused due to diseases. CO4: To make learner familiar with biostatistics as an important tool of analysis and its applications.They will also be able to set up a hypothesis and verify the same using limits of significance.
ZOOLOGY-IV Anatomy and Developmental Biology. (Theory and Practical)	USZO504 USZOP06	CO1: To introduce the learner to understand different integumentary structures and derivatives in the vertebrates and to acquaint learners with special derivatives of integument. CO2: To introduce the learner to different bones of human skeleton and their functional importance. CO3: Learner will be able to understand the types of long limb muscles, its arrangement and their role in body movements. CO4: Learner will be able to understand the processes involved in embryonic development and practical applications of studying the chick embryology.
ZOOLOGY-V Marine science: Oceanography and Capture Fisheries. (Theory and Practical)	USACMSC501 USACMSC5P1	CO 1: Learner would understand different zones of sea (marine habitat) and their impact on biodiversity. CO 2: Learner will understand normal values of different chemical nutrients of sea water and their

		importance for the flora and fauna. CO 3: Learner will come to know about important modern instruments used in the field of oceanography and different chemical, physical and biological parameters studied by using them. CO 4: Learner will gain knowledge of boat building, its maintenance and operational methods of gears to optimise fish catch.

T.Y. B.Sc. – SEMESTER VI

(ZOOLOGY)

After completing the course, the learner will be able to:

COURSE NAME	**COURSE CODE**	**COURSE OUTCOME**
ZOOLOGY-I Taxonomy – Chordates and Type Study. (Theory and Practical)	USZO601 USZOP07	CO1: Learners will get an idea of origin of Chordates, its taxonomy up to class with reference to phylogeny and their special features. CO2: To understand the Division: Agnatha and Gnathostomata, Class: Amphibia and Superclass: Pisces and Tetrapoda of Phylum Chordata. CO3: To understand the Classes: Reptilia, Aves and Mammalia and their examples. CO4: To understand the habit & habitat, distribution, external features, classification and economic importance of Shark.
ZOOLOGY-II Physiology and Tissue Culture. (Theory and Practical)	USZO602 USZOP07	CO1: The learner shall understand fundamentals of enzyme structure, action and kinetics. The learner shall appreciate the enzyme assay procedures and the therapeutic applications of enzymes.

		CO2: To introduce to the learner the concept of homeostasis-thermoregulation and osmoregulation. The learner shall comprehend the adaptive responses of animals to environmental changes for their survival. CO3: To introduce to the learner the details of endocrine glands and its disorders. CO4: To introduce to the learner the fundamental concepts of tissue culture and guide them progressively to certain areas of animal tissue culture.
ZOOLOGY-III Genetics and Bioinformatics. (Theory and Practical)	USZO603 USZOP08	CO1: Learner shall get an insight into the intricacies of chemical and molecular processes that affect genetic material and also understand related areas in relatively new fields of genetic engineering and biotechnology. CO2: The learner shall get acquainted with the vast array of techniques used to manipulate genes which can be applied in numerous fields like medicine, research, etc. for human benefit. CO3: The learner shall become aware of the impact of changes occurring at gene level on human health and its diagnosis. CO4: Learner shall become aware of the computational

		point of view of studying the genomes.
ZOOLOGY-IV Environmental Biology and Zoopharmacognosy. (Theory and Practical)	USZO604 USZOP08	CO1: Learners will understand the different factors affecting environment, its impact and environment management laws. CO2: Learners will understand various methods for wildlife conservation. Learners will be able to apply knowledge to overcome the issues related to wildlife conservation and management. CO3: Learners will understand the paradigms of discovery and commercialization of biological resources and knowledge gained by self – medication by animals. CO4: The learners will become acquainted with how and why different animal species are distributed around the globe.
ZOOLOGY-V Marine Science: Production and Management. (Theory and Practical)	USACMSC601 USACMSC6P1	CO 1: Learner will take the first step to become entrepreneur in the field of culture fishery with basic knowledge of marine aquaculture. CO 2: Learner will be acquainted with variety of marine value-added products, their nutritional values and economic significance. CO 3: Learner will acquire knowledge of specific methods of preservation and

		processing for different fish products for enhancing their shelf life and commercial value. CO 4: Learner will gain expertise to identify causative agents, symptoms and treatment for different fish diseases.