



H. D. Jain College, Ara

(A Constituent Unit of V. K. S. U, Ara)



4 Years Bachelor of Arts B.A. (Hons.) in Zoology under CBCS

Course Outcomes (Major Courses)

S.No	UG Semester	Course	Course Outcomes
1.	I	MJC-1 Diversity of Non-Chordata	<p>CO-1: Learn about the importance of systematics, taxonomy, and structural organization of non-chordates.</p> <p>CO-2: Understand & Appreciate the diversity of non-chordates living in varied habits and habitats.</p> <p>CO-3: Understand evolutionary history and relationships of different non-chordates through functional and structural affinities.</p> <p>CO-4: Critically analyse the organization, complexity and characteristic features of non chordates.</p> <p>CO-5: Recognize the life functions and the ecological roles of the animals belonging to different phyla.</p> <p>CO-6: Enhance collaborative learning and communication skills through practical sessions, teamwork, group discussions, assignments, and projects.</p>
2.	II	MJC-2 Diversity of Chordates	<p>CO-1: Understand different classes of chordates, level of organization and evolutionary relationship between different subphyla and classes, within and outside the phylum.</p> <p>CO-2: Study about diversity in animals making students understand about their distinguishing features.</p> <p>CO-3: Appreciate similarities and differences in life functions among various groups of animals in Phylum Chordata.</p> <p>CO-4: Comprehend the circulatory, nervous and skeletal system of chordates.</p> <p>CO-5: Know about the habit and habitat of chordates in marine, freshwater and terrestrial ecosystems.</p>
3.	III	MJC-3 Comparative Anatomy	<p>CO-1: Explain comparative account of the different vertebrate systems</p> <p>CO-2: Understand the pattern of vertebrate evolution, organization and functions of various systems.</p> <p>CO-3: Learn the comparative account of integument, skeletal components, their functions and modifications in different vertebrates.</p> <p>CO-4: Understand the evolution of heart, modification in aortic arches, structure of respiratory organs used in aquatic, terrestrial and aerial vertebrates; and digestive system and its anatomical specializations with respect to different diets and feeding habits.</p> <p>CO-5: Learn the evolution of brain, sense organs and excretory organs to a complex, highly evolved form in mammals;</p> <p>CO-6: Learn to analyze and critically evaluate the structure and functions of vertebrate systems, which helps them to discern the developmental, functional and evolutionary history of vertebrate species.</p>



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4	III	MJC-4 Physiology	<p>CO-1: Know the principles of normal biological function in human body.</p> <p>CO-2: Outline basic human physiology and correlate with histological structures.</p> <p>CO-3: Comprehend and analyse problem based questions on physiological aspects.</p> <p>CO-4: Recognize and explain how all physiological systems work in unison to maintain homeostasis in the body; and use of feedback loops to control the same.</p> <p>CO-5: Learn an integrative approach to understand the interactions of various organ systems resulting in the complex overall functioning of the body.</p>
5.	IV	MJC-5 Cell Biology	<p>CO-1: Understand fundamental principles of cell biology.</p> <p>CO-2: Explain structure and functions of cell organelles involved in diverse cellular processes.</p> <p>CO-3: Appreciate how cells grow, divide, survive, die and regulate these important processes.</p> <p>CO-4: Comprehend the process of cell signaling and its role in cellular functions.</p> <p>CO-5: Have an insight of how defects in functioning of cell organelles and regulation of cellular processes can develop into diseases.</p> <p>CO-6: Learn the advances made in the field of cell biology and their applications.</p>
6	IV	MJC-6 Endocrinology	<p>CO-1: Understand endocrine system and the basic properties of hormones.</p> <p>CO-2: Appreciate the importance of endocrine system and the crucial role it plays along with the nervous system in maintenance of homeostasis.</p> <p>CO-3: Gain insight into the molecular mechanism of hormone action and its regulation.</p> <p>CO-4: Know the regulation of physiological process by the endocrine system and its implication in diseases.</p> <p>CO-5: Gain knowledge about the prevalent endocrine disorders and critically analyze their own and their family's health issues.</p>
7.	IV	MJC-7 Ecology	<p>CO-1: Demonstrate an understanding of key concepts in ecology with emphasis on historical perspective, role of physical factors and concept of limiting factors.</p> <p>CO-2: Comprehend the population characteristics, dynamics, growth models and interactions.</p> <p>CO-3: Understand the community characteristics, ecosystem development and climax theories.</p> <p>CO-4: Know about the types of ecosystems, food chains, food webs, energy models and ecological efficiencies.</p> <p>CO-5: Apply the basic principles of ecology in wildlife conservation and management.</p>



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			CO-6: Inculcate scientific quantitative skills, evaluate experimental design, read graphs, and analyse and use information available in scientific literature
8.	V	MJC-8 Biochemistry	CO1- To understand the structure, classification and importance of Carbohydrates and Proteins. CO2- To understand the structure and significance of physiologically important Lipids. CO3- To understand the basic structure and types of DNA and RNA, Base pairing, denaturation and renaturation of DNA. CO4- To understand the types of Kinetics.
9.	V	MJC-9 Genetics	CO 1- To explain and discuss the genetic variation through linkage and crossing over. CO 2- To describe sex-linked, sex limited and sex influenced inheritance. CO 3- To understand the Concept behind genetic disorder, gene mutations and molecular basis of mutations and to explain the criteria for extra-chromosomal inheritance. CO 4- To describe the molecular mechanisms of recombination in bacteria and to explain and distinguish the concept of transposable genetic elements in prokaryotes and eukaryotes. To Solve genetic based problems.
10.	VI	MJC-10 Developmental Biology	CO1- To describe the mechanism of gametogenesis, fertilization and blocks to polyspermy. CO2- To explain early embryonic development in frog and chick. CO3- To understand the concepts of late embryonic development in model organisms. CO4 - To describe post embryonic development such as metamorphosis and regeneration with suitable examples and apply important experiments and project work.
11.	VI	MJC-11 Evolution	CO 1- To understand the basis of origin of life such as: chemogeny, RNA world, biogeny and evolution of eukaryotes. CO 2- To obtain the various evolutionary concepts and heritable variation and to understand concept of species, isolating mechanisms, modes of speciation and adaptive radiation. CO 3- To explain and different types of fossils, geological time scale, climatic conditions, hominid characteristics, primate phylogeny and evolution of horse and man. CO 4- To understand Hardy-Weinberg principle of genetic equilibrium and its destabilizing forces such as Natural selection, Mutation, Migration and genetic drift.
12.	VI	MJC-12 Animal Behaviour	CO 1- To understand various pattern of animal behaviours such as stereotyped, instinct, learnt, associative behaviour along with operant conditioning and habituation imprinting and to explain the concept of social and sexual behaviour.



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			<p>CO 2- To provide the concept of biological rhythm, photoperiod and regulation of seasonal reproduction of vertebrates and role of melatonin.</p> <p>CO 3- To understand the relevance of biological clock in terms of chronopharmacology, chronomedicine and chronotherapy.</p> <p>CO 4- To develop the skill in this course by performing practical works such as studying nest and nesting habitat of birds and social insects and other significant experiments.</p>
13.	VII	MJC-13 Molecular Biology	<p>CO 1- To understand Central dogma of molecular biology. Explain and distinguish mechanism of replication, transcription and translation in prokaryotes and eukaryotes.</p> <p>CO 2- To understand and explain the post transcriptional modifications in eukaryotes.</p> <p>CO 3- To explain and differentiate the mechanism of gene expression and regulation in prokaryotes and eukaryotes</p> <p>CO 4- To describe the concept of regulatory RNAs, Ribo-switches and RNA interference and to enhance skill in molecular biology through relevant experiments.</p>
14.	VII	MJC-14 Research Methodology	<p>CO1: Develop the skill of contextualization of knowledge and critical thinking</p> <p>CO2: Choose appropriate methods of research aims and objectives</p> <p>CO3: Apply ethical principle in research work.</p> <p>CO4: Understand the philosophy of research integrity and publication ethics.</p>
15.	VII	MJC-15 Immunology and Microbiology	<p>CO 1- To explain cells and organs of the immune system, innate and adaptive immunity.</p> <p>CO 2- To describe autoimmunity with reference to rheumatoid arthritis and tolerance and AIDS.</p> <p>CO 3- To understand antigens and its type, structure and functions of immunoglobulins, antigen-antibody interactions and immunoassays (such as ELISA and RIA).</p> <p>CO 4- To explain structure and functions major histocompatibility complex, know the concept of hypersensitivity and vaccines.</p> <p>CO 5- To understand the microbial basis of diseases.</p>
16.	VIII	MJC-16 Instrumentation and Biometry	<p>CO1: To understand the principles and working of various instruments used in biological experimentation.</p> <p>CO2: Gain insight of relationship between mathematics and biology</p> <p>CO3: To present their data in statistically reliable form</p> <p>CO4: To test their hypothesis using different models</p> <p>CO5: To correlate their data with different factors</p>