

**DEPARTMENT OF ZOOLOGY-2022**

| <b>Serial No.</b> | <b>Course Code</b> | <b>Course Name</b>                      | <b>Course Outcome</b>   |
|-------------------|--------------------|---|---|
| 1                 | ZOO/I/EC/01        | Biosystematics and Non chordate Biology | At the end of the course, the learner will understand the principles of classification, taxonomic hierarchy, Classification of non-chordates with the salient features, and distinctive features of invertebrates   |
| 2                 | ZOO/I/EC/02        | Practical                               | Basic knowledge of museum specimen from non-chordate, Multimedia demonstration/dissection of digestive system of earthworm, prawn/cockroach<br>Slide preparation- mouthparts of insects and study of spicules of sponges and statocyst of prawn.  |
| 3                 | ZOO/III/EC/03      | Chordate Biology and Anatomy            | Learners will understand classification of chordates and affinities of Protochordates, and Specialized features of Pisces, Amphibia, Reptiles, Mammals, including structure of bone, cartilage, modification of heart and respiratory organs.   |
| 4                 | ZOO/II/EC/04       | Practical                               | Understanding specimen from representative of protochordates & chordates, osteology of pigeon and rabbit, filoplume feather and scales of fish, internal ear of <i>Scoliodon</i> and Hyoid apparatus of Frog, circulatory and reproductive system in rat/ mouse and flight muscle.  |
| 5                 | ZOO/III/EC/05      | Evolution and Ethology                  | Learners will develop critical understanding of evolutionary theory of natural selection; adaptation, concept of prebiotic soup theory and Miller's experiment, RNA world hypothesis, Geological time scale and Zoogeographical realms. It will also help in understanding types of mimicry, concept of ethology, types of behaviour including Altruism and territoriality. |
| 6                 | ZOO/II/EC/06       | Practical                               | Learners will understand vertebrate and invertebrate fossils from specimen/models and pictures, chromatography, caste system and morphological adaptations  |
| 7                 | ZOO/IV/EC/07       | Endocrinology and Reproduction Biology  | At the end of the course, the learner will understand different types of endocrine glands and their hormones, endocrine disorders: mechanism of action of hormones, biological rhythms, gametogenesis, pheromones and basic concept of contraception.   |
| 8                 | ZOO/IV/EC/08       | Practical                               | Learners will understand important endocrine glands and reproductive system of rat/mouse and cockroach from dissection/demonstration, surgical  |

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|    |                |                       | techniques and effects of castration/vasectomy/ovariectomy in rat/mouse.  |
| 9  | ZOO/V/CC/09    | Cell Biology          | Learners will understand cell theory, structure of cell, cell organelles, cytoskeleton, cell-cell interaction, extracellular matrix, cell cycle, cell division, cancer and carcinogens  |
| 10 | ZOO/V/CC/10    | Practical             | Students will understand different types of cell organelles and stages of mitosis and meiosis from slides/models, process of squash preparation from onion root tip and process of microtomy and slide preparation  |
| 11 | ZOO/V/CC/11    | Physiology            | Students will understand process of digestion and absorption, mechanism and types of respiration, structure of heart, blood, structure and function of kidney, process of osmoregulation, the types of muscles and ultrastructure, muscle proteins and mechanism of muscle contraction, types and structure of neuron, neurotransmitters and transmission of nerve impulse. |
| 12 | ZOO/V/CC/12    | Practical             | Learners will understand slides of stomach, intestine, lung, kidney and gonads of mammals, estimation of count total R.B.C and W.B.C, haemoglobin and determine blood groups, haemin crystals, smooth and skeletal muscle and determination of salivary amylase activity with effect of pH and temperatures.  |
| 13 | ZOO/V/CC/13    | Biochemistry          | Develop understanding on classification, types, structure, properties and action of proteins, carbohydrates and lipids, coenzyme, ribozyme, and vitamins. The learners will acquire knowledge about various metabolic pathways in human body.   |
| 14 | ZOO/V/CC/14    | Practical             | Acquire knowledge about estimation and detection of proteins, lipids and carbohydrate by different methods.   |
| 15 | ZOO/V/CC/15(A) | Applied Zoology       | Ability to acquaint the basic processes of applied zoology such as apiculture, aquaculture, vermicomposting and sericulture. Pest and pesticides, fish farming techniques.  |
| 16 | ZOO/V/CC/16(A) | Practical             | Learners will acquire knowledge about commercially available fish, planktons, internal organs of fish. Field visit will give learners deep understanding of fish farming.   |
| 17 | ZOO/VI/CC/17   | Molecular Biology and | Learners will gain knowledge of DNA and RNA, chromosome organization, giant   |

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|    |                 | Genetics                         | chromosomes, DNA replication, DNA repair, transcription, genetic code, translation and concept of operon. They will understand basic concepts of Mendelian genetics, cytoplasmic inheritance, linkage and crossing over, sex linked inheritance, sex determination, and also genetic disorders and mutation. |
| 18 | ZOO/VI/CC/18    | Practical                        | Acquire knowledge about estimation of DNA and RNA by different methods, they will observe Polytene chromosomes and chromosome aberrations from slides.   |
| 19 | ZOO/VI/CC/19    | Developmental Biology            | Learners will understand developmental stages, placenta and extra-embryonic membranes, organizer and induction, metamorphosis, regeneration, ageing and concept of transgenesis and stem cell.   |
| 20 | ZOO/VI/CC/20    | Practical                        | Understand cleavage, blastula and gastrula, different stages of chick embryo development, technique of whole mount of chick embryo, process of regeneration in Planaria/Hydra.   |
| 21 | ZOO/VI/CC/21    | Parasitology and immunology      | Learners will understand basics of parasitology, life history of important protozoan parasites, cestodes, trematodes and nematodes. Knowledge of basics of immune system, vaccination, antibodies and antigens, histocompatibility complex and hypersensitivity.   |
| 22 | ZOO/VI/CC/22    | Practical                        | Develop the skill of making permanent slides of protozoan and helminth parasites, learn the morphological adaptations and identification of cestodes, trematodes and nematode. And Preparation of blood film by double staining method.  |
| 23 | ZOO/VI/CC/23(A) | Biotechnology and Bioinformatics | Learners will acquire knowledge about advanced techniques such as genetic engineering, polymerase chain reaction, blotting techniques, DNA fingerprinting and gene library. They will understand basic operating systems, genome and proteome databases and phylogenetics analysis.                          |
| 24 | ZOO/VI/CC/24(A) | Practical                        | Learners will develop ability to use various information technologies and internet browsing for scientific repositories, search engines, data banks for phylogenetic analysis.   |