Faculty of Life Sciences

M.Sc. Zoology

Animal Diversity : Classification and general Characteristics of Invertebrates (Protozoa, Porifera, Ctenideria, Echinodermata, Annelida, Mollusca, Crustacea, Arachnida and Insecta) and Chordates (Protochordates and Vertebrates).

- Comparative Anatomy of Vertebrate Systems (Integumentary, Endoskeleton, Digestion, Respiration, Circulation, Urino-genital System, Nervous System and Sense Organs).

- **Cell Biology** : General Organization, Chemistry, Energy Metabolism in Cell. Techniques in Cell Biology. Structure and Function of Cell Organelles, Cell Cycle and Cell Division. Cancer and Nuclear Biology.

- **Histological Techniques** : Structure and Organization of Epithelial, Connective. Muscular and Nervous Tissue.

- Animal Ecology and Behaviour Ecosystems and Biogeochemical Cycles. Food and Nutritional relationships. Pollution and its Control. Animal Population and Communities, Behavioural Concepts. Characteristics and Types. Wild Life Preservation and Management.

- Physiology of Digestion, Blood and defense Mechanism. Circulation and Cardiac Activity. Pulmonary and Cellular respiration. Muscle Contraction and Energy Utilization. Excretion, Osmoregulation and Thermoregulation. Nervous and Sensory Physiology. Ednocrine glands and Harmones. Reproduction and Birth Control Measures.

- **Applied Zoology** : Pharmaceautical Products from animals. Sea food, Management Techniques in Fish Culture, Edible species such as Prawns, Lobsters, Molluscs, Crabs. Shell fish farming. Sericulture, Apiculture, Lac Culture, and Vermiculture, Meat, Leather and Wool Industry, Poultry and Dairy Farming. Animal Waste Recycling.

- **Devolopmental Biology and Evolution** : Germplsm, gametogenesis, Fertilization and Embryonic Membranes. Organogenesis, Embryonic Growth, Nutrient Requirement of Eggs and Embyoos. Origin of Life. Evidences of Organic Evolution (Comparative Anatomy, Physiology, Embryology, Serology and Biochemistry, Palaentology). Molecular Evolution and Phylogeny. Zoogeography, Geological Time Scale, Fossils, Evolution of Man, Theories of Evolution, Natural Selection. Industrial Melanism, Variation, Mutation, Migration, Isolation Drift, Speciation.

- **Bio-Techniques** : Microscope-Types and Techniques. Concept of Biological Buffers. Sub-cellular fractionation. Extraction of Macromolecules

(Carbohydrates, Proteins, Lipids, Nucleic acid). Colorimetry and Spectrophotometry. Basic and Applied Immunological techniques (Production of Poly and Monoclonal antibodies, Immunodiffusion, Immunelectrophoresis, Western Blotting and ELISA). Basic elements of Cell Culture. Culture of Protozoa and Nematodes. Methods of Hormonal assays. Salient features of rDNA and cloning technology. Laboratory maintenance of Insects and Vertebrates. Transgenic Models. Biostatistics and Biometry.

Genetics and Molecular Biology : Mendelian Laws, Gene interaction, Linkage and Crossing-over. Six determination in sex-lined inheritance. Cytoplasmic inheritance. Chromosomal aberrations, Euploidy and Aneuploidy, Chromosomal structure, Karyotypes and Genetic disorders, hardy-Weinberg Law, Mutation, Migration. Drift, Natural selection, Isolation, Speciation, Genetic polymorphism. Adaptation. Molecular Biology-Structure of DNA, Chromosomes and genes. Repeat Sequences, Transposons, Packacing of DNA, Replication. Enzymes and Proteins, DNA Repair System, Mutations, Transcription, Translation. Post-translational modification, rDNA, Transgenic and GM organisms, Gene therapy.