

### **Unit 1: Comparative Osteology and Arthrology**

Structure, chemical composition and classification of bones, Bones of appendicular and axial skeleton of ox as a type and their comparison with those of horse, dog, pig and poultry, classification and detailed study of different joints of the body. Study of various indices for estimating race, sex and age of different animals. Basics of biomechanics of the locomotor system, Radiography of normal and developing bones.

### **Unit 2: Comparative Splanchnology**

Descriptive anatomy of various organs of digestive system and associated glands, respiratory system and associated glands and urinary system and associated glands of ox and their comparison with those of horse, dog, pig and poultry. Study of boundaries of thoracic, abdominal and pelvic cavities, pleura and peritoneum and their reflection. Complete study of various organs and associated glands of male and female genital systems, surgical sites for various operations and clinically significant areas for performing auscultation, percussion and for carrying out surgical procedures such as laryngotomy, oesophagotomy, gastrotomy, rumenotomy, cystotomy, urethrotomy, caesarian section, exploratory laparotomy, mastectomy, thoracotomy, thoracocentesis, etc.

### **Unit 3: Myology, Angiology, Neurology and Aesthesiology of Ox**

Classification of muscle fibres, origin, insertion and relations of muscles of different body parts. Topographic anatomy of the vascular system comprising of heart, arteries, veins and lymphatics. Study of various components of central nervous system, peripheral nervous system and autonomic nervous system. Complete study of the gross anatomy of various sense organs. Study of different nerve blocks, injections in different species of domestic animals, sites and enucleation of eyeball.

### **Unit 4: Histological and Histochemical Techniques**

Preparation of tissues for light microscopy using different fixatives, different staining methods for routine light microscopy, frozen sectioning techniques and staining methods for enzymes, carbohydrates, lipids, proteins, pigments etc. Silver staining techniques for nervous tissue.

### **Unit 5: General and Systemic Histology and Ultrastructure**

General: Light and ultra-structural details of animal cell, epithelial tissue, muscular tissue, connective tissue and nervous tissue. Systemic: Light and ultrastructure of different organs of digestive system, respiratory, lymphoid organs, endocrine organs, cardiovascular system, urogenital system, different sense organs, integumentary system and nervous system of ruminants with differential features among domestic animals.

## **Unit 6: Developmental Anatomy**

Gametogenesis, fertilization, cleavage and gastrulation, development of foetal membranes and placenta in domestic animals, histogenesis of nervous system, sense organs, endocrine organs and cardiovascular system, embryonic development of digestive, respiratory, urogenital and musculoskeletal system.

## **Unit 7: Principles and Applications of Biomechanics**

Biomechanics, its definition and scope with reference to anatomy and physiology of domestic animals and musculo-skeletal dynamics. Locomotion and clinical applications, biomechanics of cortical and trabecular bones, biomechanics of fracture fixation, instrumentation and techniques in locomotion and their application in lameness.

## **Unit 8: Avian Anatomy**

Gross and microscopic features of different body systems of domestic fowl.

## **Unit 9: Neuroanatomy**

Gross and microscopic anatomy of the brain and spinal cord, various cranial and spinal nerves along with their associated nuclei and ganglia, motor and sensory pathways, different ascending and descending tracts of brain and spinal cord and autonomic nervous system.

## **Unit 10: Endocrine Anatomy**

Advanced gross and microscopic anatomy of the hypothalamus and pituitary gland, thyroid, parathyroid, thymus, adrenal glands, islets of Langerhans, pineal body and other tissues associated with endocrine secretions.

## **Unit 11: Theory and Applications of Electron Microscope**

Introduction and principles of electron microscopy, methods for transmission electron microscopy and scanning electron microscopy.

## **Unit 12: Histoenzymology and Immunocytochemistry**

Classification of enzymes – principles of enzymes, histochemistry methods; Substrates – combination–coupling azo-dye methods –capture reagents, localization of enzymes and controls in enzyme histochemistry. Fluorescence microscopy in enzyme histochemistry, immunohistochemistry- principles and techniques.

## **Unit 13: Applied Embryology and Teratology**

Principles of experimental embryology and teratology, factors affecting the developmental mechanisms of embryo. Use of organizer implants, chemical and hormonal preparations in the developmental models and available literature on teratogenic experimentation.

## **Unit 14: Functional Veterinary Anatomy**

The relationship of structure to form and function, the relationship of structure for adaptation and behaviour and in relation to clinical conditions/ applications.

## **Unit 15: Gross Anatomy of Laboratory Animals**

Study of different organs of digestive system of different laboratory animals, detailed study of urinary, male and female reproductive systems of different laboratory animals, complete study of respiratory system of different laboratory animals, study of organs of circulation and nervous system of different laboratory animals. Descriptive anatomy of endocrine glands of different laboratory animals.