

SARDAR PATEL UNIVERSITY
Programme: MSC (Integrated Biotechnology)
Semester: I
Syllabus with effect from: June 2010

Paper Code: PS01CIGB04	Total Credits: 3
Title Of Paper: Animal Sciences	

Unit	Description in detail	Weightage (%)
1	<ul style="list-style-type: none"> ➤ Animal Diversity – Systematics (Non-chordates) <ul style="list-style-type: none"> • Salient features and outline classification up-to classes with suitable examples (excluding minor Phyla). • Phylum – Protozoa, Porifera, Coelenterata, Platyhelminthes, Nemathelminthes, Annelida, Arthropoda, Mollusca, Echinodermata and Hemichordata ➤ Animal Diversity – Systematics (Protochordates and Chordates) <ul style="list-style-type: none"> • Salient features and outline classification upto classes with suitable examples • Protochordates – Urochordata, Cephalochordata • Chordates – Cyclostomata, Pisces, Amphibia, Reptilia, Aves, Mammalia 	
2	<ul style="list-style-type: none"> ➤ Histology <ul style="list-style-type: none"> • Structure and functions of animal tissues (in detail with types and suitable examples) • Epithelial tissue: Simple (Squamous, Columnar, Ciliated, Glandular, Sensory, Germinal, Psuedo-stratified) and Compound (Stratified, Transitional) • Connective tissue: Connective tissue proper (Areolar, White fibrous, Yellow fibrous, Adipose), Skeletal (Cartilage – Hyaline, Fibro-cartilage, Elastic cartilage, Calcified cartilage, Mammalian bone), Fluid (Blood, Lymph) • Muscular tissue: Smooth, Striated, Cardiac Nervous tissue: Structure and types of neuron and nerve fibers 	
3	<ul style="list-style-type: none"> ➤ Animal Physiology <ul style="list-style-type: none"> • Nutrition: Modes of nutrition in animals - Holozoic, Saprotrophic, Symbiotic, Parasitic • Respiration: Gaseous exchange in animals, Regulation of respiration • Circulation: Open and closed systems, Development of blood vascular system in animals, Composition and functions of mammalian blood • Osmoregulation and Excretion: Water and solute regulation in freshwater, marine and terrestrial animals, Elimination of nitrogenous wastes (Ammonotelism, Ureotelism, Uricotelism) • Reproduction and Development: Types of reproduction – Asexual reproduction (Fission, Encystation, Sporulation, Budding, Fragmentation, Regeneration), Sexual reproduction (Conjugation) 	
4	<ul style="list-style-type: none"> ➤ Selected Topics <ul style="list-style-type: none"> • Movement and locomotion in animals: Amoeboid, Ciliary and Muscular. • Animal breeding: Inbreeding, Cross breeding, Inter-specific hybridization. 	



	<ul style="list-style-type: none"> • Animal diseases and their control: Symptoms, Diagnosis, Treatment, Prevention and Control of Bacterial disease (Anthrax), Viral disease (AIDS), Parasitic disease (Ascariasis), Protozoan disease (Malaria). • Wildlife of India: Definition, Introduction and Brief history, Importance, Vanishing wildlife, Sanctuaries and National Parks, Biosphere reserves, Methods of wildlife conservation. • Economic importance of mammals: Indirect value, direct value, Usefulness of mammals (Agriculture, Transport, Scavengers, Hunting and Sports, Pets, Predator of pests), Use of mammalian products (Food, Shelter, Medicine, Oil, Dung, Musk, Ivory), Commercial products (Hides and Skins, Carcass, Horns and Hoofs, Hairs, Skeleton), Zoo and Laboratory animals. 	
	Practical:	
	<ul style="list-style-type: none"> • Study of laboratory tools: Dissecting microscope, Compound microscope and Dissection box. • Classification of Protozoa, Porifera and Coelenterata: Study of Amoeba, Paramoecium, Euglena, Plasmodium, Leucosolenia, Hylonema, Bath sponge, Hydra, Aurelia, Physalia, Sea Anemone and Corals (Favia, Fungia). Study of spicules and Spongin fibers. • Classification of Platyhelminthes, Nematelminthes and Annelida: Study of Planaria, Liverfluke, Tapeworm, Ascaris, Hookworm, Guineaworm, Earthworm, Nereis and Leech. Study of Scolex and Proglottid of Tapeworm. • Classification of Arthropoda: Study of Peripatus, Crab, Lobster, Millipede, Centepede, Silverfish, Grasshopper, Mosquito, Honeybee, Butterfly, Moth, Beetle, Bedbug, Spider and Scorpion. • Classification of Mollusca and Echinodermata: Study of Dentalium, Chiton, Pila, Slug, Bivalve, Sepia, Octopus, Sea Star, Brittle Star, Sea Cucumber, Sea Urchin, Sea Lily and Balanoglossus (Hemichordata). • Classification of Protochordata and Vertebrata (Pisces and Amphibia): Study of Amphioxus, Ascidian, Lamprey, Shark, Electric Ray, Sting Ray, Eel, Sea Horse, Catfish, Ichthyophis, Salamander, Frog and Toad. • Classification of Vertebrata (Reptilia, Aves and Mammalia): Study of Tortoise, Turtle, Calotes, Gecko, Chameleon, Rat Snake, Cobra, Alligator, Pigeon, Cuckoo, Parakeet, Woodpecker, Shrew, Rat, Bat and Rabbit. • Study of Histological slides of Mammalian tissues / Organs (Permanent): T.S. of Stomach, Small Intestine, Liver, Pancreas, Lung, Kidney, Testis, Ovary, Spinal cord and V.S. of Skin. • Environmental adaptations in Animals: Shark, Frog, Pigeon, Chameleon, Phrynosoma, Earthworm, Draco, Tapeworm, Stick Insect and Leaf Insect. • Field visit to Protected Area (National Park / Sanctuary / Natural Ecosystem) of Gujarat State (Compulsory). 	



Basic Text & Reference Books:

- A Textbook of Zoology by PN Pandey & RD Vidyarthi, S Chand Publications, New Delhi.
- Biological Science by DJ Taylor, NPO Green & GW Stout, 3rd Low-priced Ed., Cambridge, UK.
- Chordate Zoology by EL Jordan & PS Verma, S Chand Publications, New Delhi.
- Integrated Principles of Zoology by CP Hickman, McGraw Hill Publications, 11th (International) Ed., New York, USA.
- Invertebrate Zoology by EL Jordan & PS Verma, S Chand Publications, New Delhi.
- Invertebrates by RL Kotpal, Rastogi Publications, Meerut.
- Vertebrates by RL Kotpal, Rastogi Publications, Meerut.
- Animal Physiology by AK Berry, Emkay Publications, Delhi.
- Animal Physiology by PS Verma, BS Tyagi & VK Agarwal, S Chand Publications, New Delhi.
- Economic Zoology by GS Shukla & VB Upadhyay, Rastogi Publications, Meerut.
- A Practical Book of Biology by Rita Kumar, Atul Prakashan, Ahmedabad.
- A Textbook of Practical Zoology (Invertebrate) by SS Lal, Rastogi Publications, Meerut.
- A Textbook of Practical Zoology (Vertebrate) by SS Lal, Rastogi Publications, Meerut.

