

<p style="text-align: center;"><b>SARDAR PATEL UNIVERSITY</b>  <b>B.Sc. SEMESTER – IV, ZOOLOGY</b>  <b>PAPER CODE: US04CZOO51</b>  <b>TITLE OF PAPER: VERTEBRATA AND ANIMAL BEHAVIOUR</b>  <b>SYLLABUS EFFECT FROM: JUNE 2022 (TOTAL CREDIT: 4)</b></p>		
Objectives	<ul style="list-style-type: none"> <li>• To provide Detail Anatomy and Physiology about the Major Vertebrate animals</li> <li>• To provide conceptual aspect of animal behavior of animals' life processes.</li> </ul>	
Out Come	<ul style="list-style-type: none"> <li>• Type study will provide detail about anatomy and physiology of the Major vertebrate animals.</li> <li>• The students will learn about the behavior of life processes.</li> </ul>	
Unit-1	<p><b>Type: Scoliodon:</b> (External features, digestive system, Respiratory system, Blood &amp; Heart, Nervous system, sense organs and Urinogenital system)  Economic importance of fishes.  Osmoregulation in fishes.</p>	25%
Unit-2	<p><b>Type: Frog:</b> (External features, Digestive system, Respiratory system, blood &amp; Heart, Nervous system, sense organs, Urinogenital system and Metamorphosis of Frog.</p>	25%
Unit-3	<p><b>Type: Calotes:</b> (External features, Digestive system, Respiratory system, Blood &amp; Heart, Nervous system and Urinogenital system)  General account on snakes: (Identification of poisonous and non-poisonous snake, Locomotion, hearing, feeding mechanism, poison apparatus, biting mechanism, snake venom, effects and its first aid treatment)</p>	25%
Unit-4	<p><b>Animal behavior:</b>  Introduction, innate and learnt behaviour.  Role of pheromones in behaviour : Definition, types, production, mode of action, difference between pheromones and hormones..  Mating strategies: Monogamy, polygamy and polyandry.</p>	25%

Basic Text and Reference books:

- Modern Text Book of Zoology – VERTEBRATES by R. L. KOTPAL
- Chordate Zoology by JORDAN and VERMA
- Animal Behaviour by REENA MATHUR

**SARDAR PATEL UNIVERSITY**  
**B.Sc. SEMESTER – IV, ZOOLOGY**  
**PAPER CODE: US04CZOO52,**  
**TITLE OF PAPER: PHYSIOLOGY AND WILD LIFE**  
**SYLLABUS EFFECT FROM: JUNE 2019 (TOTAL CREDIT: 4)**

Objectives	<ul style="list-style-type: none"> <li>• To Provide details about the three system Physiology of mammals like human</li> <li>• To provide an account of wildlife, Protective areas and agencies.</li> </ul>	
Out Come	<ul style="list-style-type: none"> <li>• the students will learn about detail physiology of Reproduction, Lymphatic and Immunology and Urinary Systems</li> <li>• the students will learn about sanctuary ,national parks and their protocols.</li> </ul>	
Unit-1	<p><b>Human reproduction:</b>  Male and female reproductive organs.  Female reproductive cycle.  Fertilization and implantation of embryo, Embryonic and fetal development.  Maternal changes during pregnancy and labor.  Methods of birth control.  Disorders: AIDS and STD.</p>	25%
Unit-2	<p><b>Lymphatic system of human:</b>  Structure and function of primary and secondary lymphoid organs  <b>Immunology:</b>  Nonspecific resistance to diseases.  Specific resistance to diseases: (Immunity, maturation of T – cells, B – cells, antigen, types of immune response)  Cell mediated and antibody mediated immunity.  Diseases: Rheumatoid arthritis, myasthenia gravis and multiple sclerosis.</p>	25%
Unit-3	<p><b>Human Urinary system:</b>  Structure of kidney.  Renal physiology (Glomerular filtration, tubular reabsorption and tubular secretion in brief)  Production of dilute and concentrated urine (counter current system)  Urine transportation, storage and elimination.  Disorders: Polycystic kidney disease, urinary tract infection and renal failure.</p>	25%

Unit-4	<b>Wild life</b> Introduction, brief history of wild life. Importance of wild life. Vanishing of wild life. Conservation of wild life in India Sanctuaries and national park of Gujarat. Concept of threatened species. Wild life organizations.	25%
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**Reference books:**

**A text book of animal physiology - A. K. Berry**

**Animal physiology – M.P.Arora**

**Principles of anatomy and physiology- Gerard J Tortora & Bryan Derrickson**

**Modern Text Book of Zoology Vertebrates by R L Kotpal**

**SARDAR PATEL UNIVERSITY**  
**B.Sc. SEMESTER – IV, ZOOLOGY PRACTICAL**  
**PAPER CODE: US04CZOO53**  
**ZOOLOGY PRACTICAL – I (CREDIT: 2)**

Dissection by Simulation, Animation or Charts

- External characters & Digestive system of Scoliodon, Mounting : Placoid Scales
- Urinogenital System of Scoliodon, Mounting : Gills
- Brain of Scoliodon, Mounting : Ampulla of Lorenzini
- External characters , Digestive system of Frog
- Urinogenital System & Development of Frog
- Brain of Frog, Mountings of Muscle & Nerve fibers
- Study of Frog Bones
- Calotes : External characters , Digestive system
- Urinogenital of Calotes
- Brain of Calotes

Objectives	<ul style="list-style-type: none"> <li>• To Provide detail about animals and their Systems through Preserved animals</li> </ul>	
Out Come	<ul style="list-style-type: none"> <li>• The students will learn Characteristics from real preserved animals and type of Animals through Animation</li> </ul>	

Basic Text & Reference Books:

- A Manual of Practical Zoology- Chordata by P.S.VERMA

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**ZOOLOGY PRACTICAL – II (CREDIT: 2)**

**Classification of Chordata upto orders**

- **Protochordata , Cyclostomata & Fishes** : Herdmania, Doliolum, Amphioxus, Lamprey, Hammer headed SHARK, Sting ray, Sea horse, Eel, Cat fish, Sucker fish, Flat fish
- **Amphibia & Reptiles** : Ichthyophis, Salamander, Axolotal larva, Alytes, Tortoise, Varanus, Chamaeleon, Gecko, Alligator, Krait, Viper, Rat Snake, Sea Snake
- **Aves & Mammals**: Kite, Woodpecker, Kingfisher, Sparrow, Weaver bird, Hedgehog, Rat, Shrew, Loris, Porcupine, Squirrel.
- **Mammalian Histology**: T.S. of Testis, Ovary, Spleen, Kidney & L.S. of Kidney.
- Birth control methods in Human.
- Antigen – Antibody Reaction by Widal Test
- Normal & Abnormal Qualitative Urine Analysis.
- Study of Endangered Species of Gujarat
- Project Submission
- Study Tour

Objectives	<ul style="list-style-type: none"> <li>• To Provide detail about animals and their Identification through Preserved animals</li> <li>• To provide idea about clinical histology and immunology</li> </ul>	
Out Come	<ul style="list-style-type: none"> <li>• The students will learn Characteristics from real preserved animals and type of Animals through Animation</li> <li>• The students will learn about tissue anatomy and immunity</li> </ul>	

Basic Text & Reference Books:

- A Manual of Practical Zoology- Chordata by P.S.VERMA
- Practical Physiology, Anatomy & Biochemistry by SHAH, PATEL& GOEL
- Practical Zoology Invertebrate by S.S. LAL.