

BSC ZOOLOGY III SEMESTER
[[July 2019- December 2019 (ESE Winter 2019)]]

CODE	DESCRIPTION	PD/W	EXAM	CIA	ESE	TOTAL
BSZO 311	BIOLOGY OF CHORDATES	3	3hrs	20	80	100
BSZO 312	IMMUNOLOGY & MICROBIOLOGY	3	3hrs	20	80	100
BSZO 321	ZOOLOGY LAB III	6	3hrs	20	80	100
TOTAL				60	240	300

BSZO 311 BIOLOGY OF CHORDATES

Unit I: Classification and characters of Phylum Chordata -excluding extinct forms (up to orders)

Affinities of Hemichordates, Urochordates, Cephalochordates

Unit II: *Amphioxus*-Digestive system, Circulatory system, Nervous system, Reproductive system **and** larval forms. *Petromyzon*- Buccal funnel, Digestive system, Respiratory system, Circulatory, Nervous and Sense organs, Reproductive **system** and Larval forms.

Unit III: Pisces- Types of fins, origin of fins, scales of fishes, accessory respiratory organs, parental care in fishes and migration. Amphibia- Neoteny and paedogenesis, parental care in amphibians.

Unit IV: Reptiles-Identification of poisonous and non poisonous snakes. Snakes of desert. Aves- Flight adaptation, types of feet, migration in birds

Unit V: Mammals- Egg laying mammals, marsupials, insectivorous, gnawing, toothless mammals and aquatic adaptation in mammals.

BSZO312 IMMUNOLOGY & MICROBIOLOGY

Unit I: Introduction, Types of Immunity- Innate and Acquired immunity, Humoral and Cell mediated immunity, Cell and molecules of immune system, MHC (Major Histocompatibility Complex) -Basic concepts.

Unit II: Antigen – Antigenicity of molecules. Antibody- Structure & function of each classes of immunoglobulin. Antigen and antibody reactions.

Unit III: Historical aspect of Microbiology, Patterns of arrangement & structural organization of Gram positive & Gram negative bacteria.

Unit IV: Bacteria -Genetic material of bacteria, Reproduction in bacteria, Medical importance of Gram negative and Gram positive bacteria, Preliminary idea about Role of microbes in pest control & Waste water treatment.

Unit V: Industrial microbiology – Fermented Food Production – Dairy products, Alcoholic beverages (**wine and beer**) and Vinegar. Methods of food preservation and Microbial spoilage.

BSZO321: ZOOLOGY LAB III

- A. Dissections -
 - Scoliodon* – General Anatomy, Brain, Afferent and Efferent blood vessels, Cranial nerves V,VII,IX,X and Internal Ear.
- B. Microscopic Preparation-Placoid scales, Identification of Gram positive and Gram negative bacteria
- C. Osteology – Articulated and disarticulated bones of – *Rana, Varanus*
- D. Identification and Systematic Position up to order of following Museum Specimens-
 - Hemichordata- *Balanoglossus*
 - Urochordata- *Salpa, Doliolum, Herdmania*
 - Cephalochordata- *Amphioxus*
 - Cyclostomata- *Petromyzon, Myxine*
 - Pisces- *Scoliodon, Zygaena, Pristis, Torpedo, Trygon, Belone*
 - Amphibia- *Uraeotyphlus, Ambystoma, Axolotol larva*
 - Reptiles- *Trionyx, Chelone, Varanus, Uromastix, Ophiosaurus,*
 - Aves- *Pavo, Ardeotis, Francolinus*
 - Mammals- *Meriones, Funambulus, Rattus, Suncus, Hemiechinus*
- E. Study of Prepared Slides- Hemichordata- *Balanoglossus*- section through proboscis and Branchiogenital region
 Cephalochordata- *Amphioxus*- T.S Oral Hood, Pharynx, Intestine, Gonads and Caudal Region
 Amphibia- T.S through various organs- Stomach, Intestine, Lung, Liver, Kidney, Spleen,
 Reptiles- V.S. skin
 Aves- different types of feather
 Mammals- T.S through various organs - Stomach, Intestine, Lung, Liver, Kidney, Spleen,
- F. Experimental Zoology
 1. **Immuno electrophoresis**
 2. **Preparation of different types of culture media for bacterial growth.**
 3. **Preparation of bacterial colony by streak plate method**
 4. **Bacterial examination of water – multiple tube fermentation test - presumptive test**
 5. **Study of bacterial resistance against antibiotics.**

Distribution of Marks

1. Dissection - Major	22
Minor	
2. Microscopic Preparation -	12
3. Spots - (5 x 4)	20
4. Experimental zoology	16
5. Year Work/ Practical Record - (CIA)	10
6. Practical Class Test - (2 x 5 Marks) (CIA)	10
7. Viva Voice -	10
Total	100

Marks Allotted Time duration 3hrs**Suggested Readings**

1. Text book of Zoology Vol-1I Vertebrates – Parker & Haswell (Edited by Marshall &Williams) (ELBS & Macmillion)
2. Vertebrate life- Pough and McFerland
3. Life of Vertebrates . J. Z. Yong
4. The Vertebrate body- Romer & Parsons
5. Biology of Vertebrates- Walter & Sayles
6. Chordate Zoology and Animal Physiology – by E.L.Jordan, and P.S.Verma, S. Chand Publication
7. Chordate Zoology – R.L. Kotpal , Rastogi Publication, Meerut
8. Microbiology – An Introduction – Gerard Tortora- Pearson Education
9. A Text Book Of Microbiology – R. Ananthnaryan , C.K Jayaram Paniker
10. Text Book Of Microbiology – Naveen Kango- Ik Publishing House
11. Text Book Of Microbiology And Immunology – S.C Parija- Elsevier India
12. Food Microbiology – SK Sinha, Ashok Kumar Sharma-Hb- Oxford Book Co
13. Microbial Taxonomy And Culture Techniques- R P Singh- Kalyani Publisher
14. Introduction to immunology - Kuby