St. Aloysius College (Autonomous), Jabalpur
Department of Higher Education, Govt. of M.P.
Under Graduate Syllabus for B.Sc. (Bio)
As recommended by Central board of Studies in Zoology
Class - B.Sc. III Semester
(Session 2023-24)

Theory Syllabus

Part A- Introduction			
Program: Diploma	Class: B.Sc.	Year: III Sem	Session: 2023-24
Subject: Zoology			

1	Course Code	S2-ZOOL1T
2	Course Title	Diversity of Chordates and Comparative Anatomy
3	Course Type	Core Course-Major
4	Pre-requisite (if any)	To study this course, a student must have had the subject Zoology in class B.Sc. III Sem
5	Course Learning outcomes (CLO)	After completion of the course the students will able to: 1. Understand chordate diversity of animals and their taxonomic positions. 2. Identify the morphological and anatomical features and basis of chordate classification. 3. Know economic importance and present status that will develop positive attitude towards conservation of biodiversity. 4. Differentiate the organism belonging to different taxa, by studying comparative anatomy. 5. The project, assignment will give them a flavor of research in studying biodiversity, taxonomy besides improving their writing skills and lay foundation of career in Zoology.
6	Credit Value	4
7	**Total Marks:**	Max. Marks: 60+40 Min. Passing Marks:35

Part B – Content of the course

Total No of lectures-Tutorials-Practical: 02 hours per week
LTP-

No. of Lectures = 60

Unit	Topics	No. of Lectures
I	**1. Introduction to Chordates** 1.1 Traditional Knowledge on Animal Science in ancient Indian Civilization 1.2 Origin of Chordates, General characteristics and outline classification of Phylum Chordata up to orders according to Parker and Haswell, Seventh Edition **2. Protochordata** 2.1 General characteristics and classification of Sub- Phylum Urochordata and Cephalochordata. 2.2 Type study of Herdmania and retrogressive metamorphosis in ascidian tadpole.	12

	2.3 Type study of Amphioxus and its Affinities. **3. Agnatha** 3.1 Comparison of Petromyzon and Myxine. **Keywords/Tags:** Chordata, Herdmania, Amphioxus, Cephalochordata, Petromyzon.	
II	**1. Pisces** 1.1. General characteristics and classification of Pisces. 1.2. Accessory respiratory organs, Parental care in fishes. **2. Amphibia** 2.1 General characteristics and classification of Amphibia. 2.2 Parental Care in Amphibia and Paedomorphosis **3. Reptilia** 3.1. General Characteristics and classification of Reptilia. 3.2. Difference between Poisonous and Non-Poisonous snakes, Venom and Antivenom 3.3. Poison apparatus and biting mechanism in snake. **Keywords/Tags:** Pisces, Parental care, Amphibia, Reptiles, Poison apparatus.	12
III	**1. Aves** 1.1 Brief Introduction of "Birdman" of India - Dr. Salim Ali 1.2 General characteristics and classification of Aves. 1.3 Migration of birds, principles and aerodynamics of flight. 1.4 Flight adaptation in birds. **2. Mammalia** 2.1 General characteristics and classification of mammals. 2.2 Adaptive radiation in mammals with reference to locomotory appendages. 2.3 Introduction of ZSI (Zoological Survey of India) **Keywords/Tags:** Aves, Aerodynamics, Flight Adaptation, Mammalia, Adaptive Radiation, Locomotory Appendages.	12
IV	**Comparative Anatomy of Vertebrates.** 1. Comparative study of integument and its derivatives of Vertebrates. 2. Comparative study of appendicular skeleton (Limb and girdles) of Vertebrates. 3. Comparative study of digestive system of Vertebrates. 4. Comparative study of respiratory system of Vertebrates **Keywords/Tags:** Integument, Derivatives, Girdles, Digestive System, Respiratory System.	14
V	**Comparative Anatomy of Vertebrates.** 1. Comparative study of aortic arches and heart of Vertebrates. 2. Comparative study of Brain of Vertebrates. 3. Comparative study of Urinogenital System of Vertebrates 4. Study of Eye and Ear of mammals **Keywords/Tags:** Heart, Brain, Kidney, Urinogenital System, Eye, Ear.	10

Practical Syllabus

Part A- Introduction

Program: Diploma	Class : B.Sc.	Year: III Sem	Session: 2023-24

Subject: Zoology

1	Course Code	S2-ZOOL1P
2	Course Title	Chordate Zoology
3	Course Type (Core)	Core Course-Major
4	Pre-requisite (if any)	To study this course, a student must have bad studied the subject Zoology in class B.Sc. III Sem.
5	Course Learning outcomes (CLO)	On completion of this course, learners Will be able 1. Identify diversity of chordates, basics of systematics and hierarchy of different categories. 2. Learn characteristics of different classes of vertebrates through studying examples (preserved specimens) 3. Gain training experience in anatomy by learning dissection and mounting. 4. Get knowledge how vertebrate organs differ from class to class by comparative study of Osteology and histology. 5. Develop flow of research and skills of writing by submitting project report and assignment.
6	Credit Value	2
7	Total Marks	Max. Marks: 60+40 . Min. Passing Marks:35

Part B – Content of the course

Total No. of Lectures-Tutorials-Practical: 2 hour per week L-T-P:
No. of Lectures = 30

Unit	Topics	No. of Lectures
I	Study of museum specimens 1. Protochordata: Herdmania, Amphioxus 2. Fishes: Scoliodon, Stegostoma, Torpedo, Heteropneustes, Labeo, Exocoetus, Hippocampus, Anabas, Eel, Flat fish. 3. Amphibia : Necturus, Bufo , Rana, Salamander, Hyla, Axolotl larva, Mid Wife Toad, Ichthyophis 4. Reptilia : Chelone, Trionyx, Hemidactylus, Varanus, Chameleon, Draco, Viper, Naja, Hydrophis. 5. Aves : Local Birds, Vulture, Great Indian Bustard, Lesser Florican 6. Mammalia : Bat, Funambulus, Platypus, Rat,	6

I I	**Study of Histological slides -** T.S. of Duodenum, Stomach, Small Intestine, Liver, Pancreas, Testis, Ovary, V.S. of skin, L.S. of Kidney of vertebrates	2
II I	**Osteology** - Study of Limb Bones and Girdles of Vertebrates (Amphibia, Reptilia, Aves, Mammalia).	3
I V	Study of different types of feathers/ beaks of birds.	2
V	Dissection of Local fish (Only demonstration of commercially available local fish / Through computer simulation method/through You tube videos / through models and charts. a) General Viscera, Arterial System b) Cranial nerves V, VII, IX and X	8
V	Mounting of scales of fishes	2
V	Comparative study of heart and brain of vertebrates	2
VI II	Study of local bird fauna of surrounding area (College campus/ Village/ Garden/ Ward)	3
VI X	Collection	2

Keywords/Tags: Protochordates, Duodenum, Girdles, Feathers, Cranial nerves, Brain, Birds

Part C – Learning Resources

Text Books, Reference Books, Other resources

Suggested Readings:

1. Lal, S.S., "Vertebrate Practical Zoology", 11 Revised edition, Rastogi publications, Meerut (2009).
2. Sharma, Vijay Laxmi., "Practical Zoology", Paragon industrial publication (2004)
3. Verma P.S., "Manual of Practical Zoology — Chordates",S. Chand Co. Ltd. 11th Edition (2010).
4. Prakash, M., & Arora, C.K., "Laboratory animals", Anmol Publications, New Delhi (1998).
5. Yadav & Varshney, " Practical Zoology", Kedarnath Ramnath (2015).
6. लाल, एस एस "प्रयोगात्मक प्राणी विज्ञान – कशेरुकी" रस्तोगी प्रकाशन, मेरठ
7. अंसारी एस एस., डॉक्टर कोहली, के., जैन, नरेंद्र, भाटिया, ए. एल., "प्रायोगिक प्राणी विज्ञान" आर. बी. डी. पब्लिकेशन
8. Books Published by MP Hindi Granth Academy, Bhopal.

Suggestive digital platforms web links

(Virtual Dissection)

2. https://en.wikipedia.org/wiki/Chordate
3. https://www.youtube.com/watch?v=BBfdzpdNh70
4. https-://www.youtube.com/watch?v=6GbJWJ3Swsc
5. http://www.ignotthelp.in/ignou-lse-08-study-material-in-hindi/
6. https://www.mphindigranthacademy.org/

Suggested equivalent online courses:

Part D- Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Internal Assessment	Marks	External Assessment	Marks
Class Interaction /Quiz	10	Viva Voce on Practical	10
Attendance	10	Practical Record File	10
Assignments (Charts/ Model Seminar / Rural Service/ Technology Dissemination/ Report of Excursion/ Lab Visits/ Survey / Industrial visit)	20	Table work / Experiments 1- Spotting (museum specimens, slides and bones) 2. Dissection Major Minor 3. Mounting 4. Comment on comparative study (Models Charts of organs, Systems) Any two 5. Identification and comment on feather / of bird (any 2- Photograph/ model/chart 6. Collection	16 08 4 4 4 4
TOTAL	40		60

Any remark/Suggestions: Visit to National Park/Sanctuary/Zoo any nearby Forest area