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. I Semester

(Session 2022-23)

Theory Syllabus			
Part A Introduction			
Programme-CertificateCourse	**Class: B.Sc**	**Year: I Semester**	**Session: 2022-23**
Subject: Zoology			
1.	Course Code	S1-ZOOL1T	
2.	Course Title	Animal Diversity: Non-Chordata	
3.	Course Type (Core Course/Elective/Generic Elective/Vocational.)	Generic Elective	
4.	Pre-requisite (if any)	To study this course a student must have had the subject Biology in 12th Class	
5.	Course Learning outcomes (CLO)	Upon completion of the course students should be able to 1. Learn about the importance of systemic, taxonomy and phylogeny to get a concrete idea of evolution of non-chordate phyla. 2. Understand the various morphological, anatomical structures and functions of animals of different phyla. 3. Get the knowledge about economic, ecological and medical significance of various animals in human welfare. 4. Understand the important parasites and their control measures.	
6.	Credit Value	3	
7.	Total Marks	Max. Marks: 40+60	Min. Passing Marks:35

Part B Content of the course		
Total No. of Lectures – Tutorials- Practical (in hours per week): 2hours per week L-T-P:		
Unit I	**Topics**	**No. of Lectures**
I	**Taxonomy, Phylogeny and Protozoa** **1. Taxonomy** 1.1 Elementary Knowledge of Zoological Nomenclature and International Code 1.2 Outline Classification of Animal Kingdom upto Phylum of acoelomate and coelomate non-chordates according to Parker and Haswell 7th edition **2.Phylogeny** 2.1 Definition and Examples **3. Protozoa** 3.1 Phylum Protozoa: General characters of the phylum and outline classification upto classes with distinctive characters and suitable examples 3.2 Structure, life history and pathogenicity of malarial parasite (Plasmodium vivax) 3.3 Protozoa and disease -Amoebiasis, Trypanosomiasis, Leishmaniasis & Trichomoniasis **Keywords/Tags**: ICZN, Classification, Protozoa, Plasmodium,	11
II	**Porifera, Coelenterata** **1. Porifera** 1.1 Phylum Porifera: General characters of the phylum and outline classification up to classes with distinctive characters and suitable examples 1.2 Type study of Sycon Morphology, Reproduction & Development 1.3 Canal system of Sponges **2. Coelenterata** 2.1 Phylum Coelenterata: General characters of the phylum and outline classification up to classes with distinctive characters and suitable examples. 2.2 Type Study of Obelia -Morphology, Life cycle 2.3 Corals and Coral reef formation **Keywords/Tags**: Classification, Porifera, Sycon, Coelenterata, Obelia, Coral reefs	11
III	**Platyhelminthes, Nemathelminthes, Annelida** **1. Platyhelminthes** 1.1 Phylum Platyhelminthes: General characters of the phylum and outline classification up to classes with distinctive characters and suitable examples 1.2 External morphology and life history of Liver fluke **2. Nemathelminthes** 2.1 Phylum Nemathelminthes: General characters of the phylum and outline classification up to classes with distinctive characters and suitable examples	

	2.2 Pathogenic symptoms of Nematodes and diseases – Ascariasis ,Trichuriasis,*Enterobiasis, Filariasis & Trichinosis* (Trichinellosis) **3. Annelida** 3.1 Phylum Annelida: General characters of the phylum and outline classification up to classes with distinctive characters and suitable examples 3.2 Type study of Earthworm (*Pheretima*) 3.3 Structure and significance of Trochophore larva **Keywords/Tags**: Classification, Platyhelminthes, Liver fluke, Nematode disease, Annelida, *Pheretima*, Trochophore	13
IV	**Arthropoda, Mollusca** **1. Arthropoda** 1.1 Phylum Arthropoda: General Characters of the phylum and outline classification up to classes with distinctive characters and suitable examples 1.2 Type study of Prawn 1.3 Insects as a vector of human disease - Culex, Aedes, Tsetse fly & Housefly. **2. Mollusca** 2.1 Phylum Mollusca: General characters of the phylum and outline classification up to classes with distinctive characters and suitable examples 2.2 Type study of *Pila* **3. Echinodermata** 3.1 Phylum Echinodermata: General characters of the phylum and outline classification up to classes with distinctive characters and suitable examples **4. Hemichordata** 4.1 Phylum Hemichordata: General characters of the phylum michordate and relationship with non-chordates and chordates **Keywords/Tags**: Classification, Arthopoda, Prawn, Crustacea larva, Insects, Mollusca, *Pila*, Glochidium	10

Part C-Learning Resources

Text Books, Reference Books, Other resources

Suggested readings

1. Parker, J, Haswell, WA, "A Text Book of Zoology". VII edition, Vol. 1 & II, Low Price Publications, Delhi, 1990.

2. Barnes, RD, "Invertebrate Zoology", VII Edition, Cengage Learning, India, 2006.

3. Pechenik, JA, "Biology of the Invertebrates" McGraw-Hill Educations, VII Edition, 2015.

4. Sedgwick, A, "A Students Text Book of Zoology", Vol.l. Il & Vol. III., Low Price Publications, Delhi, 1990.

5. Dhami and Dhami, "Invertebrate Zoology" R., Chand & Co., India, 2009.

6. Jordan and Verma, "Invertebrate Zoology," S. Chand & Company. New Delhi, 2013.

7. Agarwal, VK, "Zoology for Degree Students: Non-Chordata", S Chand & Company,2017.

8. Kotpal, R, "Modem Text Book of Invertebrates", Rastogi Publications, Meerut, 2017

9. Kotpal, R. "Protozoa to Echinodermata (Phylum Series)", Rastogi Publications, Meerut, 2017.

10. https://zoologylearningpoint.wordpress.com

11. https://zoologyresources.com

Suggested equivalent online courses:

1. Swayam Online Courses

https://storage.googleapis.com'uniquecourses/online.html

2. National Digital Library

https://ndl.iitkgp.ac.in/

3. e-PG Pathshala (MHRD) Portal(https://epgp.in/libnet.ac.in/)

4. Animal diversity https://swayam.gov.in/courses/5686/animal-diversity

Advances in Animal Diversity, Systemics and Evolution

(https://swayam.gov.in/courses/5686-zoology)

5.Science Direct Open Access Content

(https://www.sciencedirect.com/book/9781843342038/open-access)

Practical Syllabus				
Part A Introduction				
Programme: Certificate Course		Class: B.Sc	Year: I Semester	Session: 2022-23
Subject: Zoology				
1.	Course Code	S1-ZOOL1P		
2.	Course Title	Invertebrate		
3.	Course Type (Core Course/Elective/Generic Elective/Vocational/….)	Elective Course		
4.	Pre-requisite (if any)	To study this course a student must have had the subject Biology in 12th Class		
5.	Course Learning outcomes (CLO)	Upon completion of the course students should be able to 1. Identify invertebrate animals of different phyla and their histology through study of museum specimens and slides. 2. Learn their different systems through dissections. 3. Enhance collaborative learning and communication skills through practical sessions, team work, group discussions, assignments and projects.		
6.	Credit Value	1		
7.	Total Marks	Max. Marks: 40+60		Min. Passing Marks:35

Part B- Content of the Course		
Total No. of Lectures - Tutorials-Practical (in hours per week): 02 hours per week **L-T-P:**		
Unit	**Topics**	**Hours**
1	• Study of museum specimens and slides relevant to the invertebrates. • Dissection (Demonstration Only -Through You Tube Video or Models or Charts) • Earthworm- Digestive system. Nervous system, Reproductive system • Prawn-Nervous system and appendages	15
2	• Mouth Parts of Insects Cockroach/Mosquitoes • Examination of pond water for study of different kinds of microscopic non-chordate organisms	

3	• Economic Importance of any two invertebrates/ two Insect • Parasitic Adaptation of any one parasite – Fasciola hepatica/Taenia solium	
Keywords/Tags: Museum specimens, Slides, Dissection, Mounting, Benefited insects, parasitic adaptation.		

Part C-Learning Resources

Text Books, Reference Books, Other resources

Suggested Readings:

1. Arumuam, N. Nair, NC, Leelavathy, S. Pandian, NS, Murugan, T, Jayasurya, "Practical Zoology - Invertebrata", Volume-I. Saras Publication, 2013.

2. Lal, SS. "A Text book of Practical Zoology - Invertebrates", Rastogi Publication, 2016

3. Prakash, M, and Arora, CK. "Laboratory Animals". Anmol Publications, New Delhi, 1998

4. Verma, PS, "A Manual of Practical Zoology - Invertebrates". S. Chand & Co., 2013.

5. Virtual Labs (https://www.vlab.co.in)

Part D Assessment and Evaluation			
Suggested Continuous Evaluation Methods:			
Internal Assessment	Marks	External Assessment Marks	Marks
Class/Interaction/Quiz	10	Viva Voce on Practical	05
Attendance	10	Practical Record File	05
Assignments (Charts/Model/Seminar/Rural Service/Technology Dissemination/Report of Excursion/lab visits/Survey/Industrial visit)	20	Table work/ Experiments a. Spotting b. Dissection c. Mounting d. Examination of pond water e. Economic Importance of Insects f. Parasitic Adaptations	50 16 08 04 10 06 06
Total	**40**		**60**
Any remarks/suggestions:			