**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 2023-24)**

| Theory Syllabus | | | |
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| Part A Introduction | | | |
| **Programme - Certificate Course** | **Class: B.Sc.** | **Year: I Semester** | **Session: 2023-24** |
| Subject: Zoology | | | |
| 1. | Course Code | S1-ZOOL1T | |
| 2. | Course Title | Animal Diversity: Non-Chordata | |
| 3. | Course Type | Core Course -Minor | |
| 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<br>1. Learn about the importance of systemic, taxonomy and phylogeny to get a concrete idea of evolution of non-chordate phyla.<br>2. Understand the various morphological, anatomical structures and functions of animals of different phyla.<br>3. Get the knowledge about economic, ecological and medical significance of various animals in human welfare.<br>4. Understand the important parasites and their control measures. | |
| 6. | Credit Value | 4 | |
| 7. | Total Marks | Max. Marks: 60+40 | Min. Passing Marks:35 |

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| Part B Content of the course | | |
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| 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**<br>**1. Taxonomy**<br>1.1 Elementary Knowledge of Zoological Nomenclature and International Code<br>1.2 Outline Classification of Animal Kingdom upto Phylum of acoelomate and coelomate non-chordates according to Parker and Haswell 7th edition<br>**2.Phylogeny**<br>2.1 Definition and Examples<br>**3. Protozoa**<br>3.1 Phylum Protozoa: General characters of the phylum and outline classification up to classes with distinctive characters and suitable examples<br>3.2 Structure, life history and pathogenicity of malarial Parasite (Plasmodium vivax)<br>3.3 Protozoa and disease - **Amoebiasis, Trypanosomiasis, Leishmaniasis& Trichomoniasis**<br><br>**Keywords/Tags**: ICZN, Classification, Protozoa, Plasmodium, | 11 |
| II | **Porifera, Coelenterata**<br>**1. Porifera**<br>1.1 Phylum Porifera: General characters of the phylum and outline classification up to classes with distinctive characters and suitable examples<br>1.2 Type study of Sycon Morphology, Reproduction & Development<br>1.3 Canal system of Sponges<br>**2. Coelenterata**<br>2.1 Phylum Coelenterata: General characters of the phylum and outline classification up to classes with distinctive characters and suitable examples.<br>2.2 Type Study of Obelia -Morphology, Life cycle<br>2.3 Corals and Coral reef formation<br><br>**Keywords/Tags**: Classification, Porifera, Sycon, Coelenterata, Obelia, Coral reefs | 11 |
| III | **Platyhelminthes, Nemathelminthes, Annelida**<br>**1. Platyhelminthes**<br>1.1 Phylum Platyhelminthes: General characters of the phylum and outline classification up to classes with distinctive characters and suitable examples<br>1.2 External morphology, larval forms and life history Fasciola hepatica (Liver fluke)<br>**2. Nemathelminthes** | |

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| | 2.1 Phylum Nemathelminthes: General characters of the phylum and outline classification up to classes with distinctive characters and suitable examples<br>2.2 Pathogenic symptoms of Nematodes and diseases – Ascariasis, Trichuriasis, Enterobiasis, Filariasis & Trichinosis (Trichinellosis)<br>**3. Annelida**<br>3.1 Phylum Annelida: General characters of the phylum and outline classification up to classes with distinctive characters and suitable examples<br>3.2 Type study of Earthworm (*Pheretima*)<br>3.3 Structure and significance of Trochophore larva<br>**Keywords/Tags**: Classification, Platyhelminthes, Liver fluke, Nematode disease, Annelida, *Pheretima*, Trochophore | 14 |
| IV | **Arthropoda, Mollusca**<br>**1. Arthropoda**<br>1.1 Phylum Arthropoda: General Characters of the phylum and outline classification up to classes with distinctive characters and suitable examples<br>1.2 Type study of Prawn<br>1.3 Larval forms of crustacea - Nauplius, Zoea, Megalopa & Mysis larva.<br>1.4 Insects as a vector of human disease - Culex, Aedes, Tsetse fly & Housefly.<br>**2. Mollusca**<br>2.1 Phylum Mollusca: General characters of the phylum and outline classification up to classes with distinctive characters and suitable examples<br>2.2 Type study of *Pila*<br>2.3 Structure & Significance of Glochidium larva<br>**Keywords/Tags**: Classification, Arthopoda, Prawn, Crustacea larva, Insects, Mollusca, *Pila*, Glochidium | 12 |
| V | **Echinodermata, Hemichordata**<br>**1. Echinodermata**<br>1.1 Phylum Echinodermata: General characters of the phylum and outline classification up to classes with distinctive characters and suitable examples<br>1.2 External features and water vascular system of Starfish (Asterias)<br>1.3 Larval forms of Echinodermata<br>**2. Hemichordata**<br>2.1 Phylum Hemichordata: General characters of the phylum Hemichordate and relationship with non-chordates and chordates<br>2.2. Balanoglossus - External morphology<br>2.3 Structure and significance of tornaria larva<br>**Keywords/Tags**: Classification, Echinodermata, *Asterias*, Echinodermata larvae, Hemichordata, Balanoglossus, Tornaria | 12 |

| Practical Syllabus | | | |
|---|---|---|---|
| Part A Introduction | | | |
| Programme: Certificate Course | Class: B.Sc | Year: I Semester | Session: 2023-24 |
| Subject: Zoology | | | |
| 1. | Course Code | S1-ZOOL1P | |
| 2. | Course Title | Invertebrate | |
| 3. | Course Type | Core Course -Minor | |
| 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<br>1. Identify invertebrate animals of different phyla and their histology through study of museum specimens and slides.<br>2. Learn their different systems through dissections.<br>3. Enhance collaborative learning and communication skills through practical sessions, team work, group discussions, assignments and projects. | |
| 6. | Credit Value | 2 | |
| 7. | Total Marks | Max. Marks: 60+40 | Min. Passing Marks:35 |

| Part B- Content of the Course | | |
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| **Total No. of Lectures - Tutorials-Practical (in hours per week): 02 hours per week**<br>**L-T-P:** | | |
| **Unit** | **Topics** | **No. of lectures** |
| 1. | Study of museum specimens and slides relevant to the invertebrates. | 25 |
| 2. | Dissection (Demonstration Only -Through You Tube Video or Models or Charts)<br>a. Earthworm- Digestive system. Nervous system, Reproductive system<br>b. Prawn-Nervous system and appendages<br>c. Pila-Nervous System<br>d. Cockroach-Digestive System, Nervous System (Easily available animal in residential areas which can be used for dissection and mounting) | 12 |

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| 3. | Mounting<br>a. Locally available small non-chordates, their larvae<br>b. Mouth Parts of Insects – Cockroach/Mosquitoes | 5 |
| 4. | Examination of pond water for study of different kinds of microscopic non-chordate organisms | 8 |
| 5. | Economic Importance of any two invertebrates/ two Insects | 5 |
| 6. | Parasitic Adaptation of any one parasite – Fasciola hepatica/Taenia solium | 5 |
| Keywords/Tags: Museum specimens, Slides, Dissection, Mounting, Benefited insects, parasitic adaptation. | | |

| Part C-Learning Resources |
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| **Text Books, Reference Books, Other resources** |
| **Suggested Readings:**<br>1. Arumuam, N. Nair, NC, Leelavathy, S. Pandian, NS, Murugan, T, Jayasurya, "Practical Zoology - Invertebrata", Volume-I. Saras Publication, 2013.<br>2. Lal, SS. "A Text book of Practical Zoology - Invertebrates", Rastogi Publication, 2016<br>3. Prakash, M, and Arora, CK. "Laboratory Animals". Anmol Publications, New Delhi, 1998<br>4. Verma, PS, "A Manual of Practical Zoology - Invertebrates". S. Chand & Co., 2013.<br>5. Virtual Labs (https://www.vlab.co.in) |

| Part D Assessment and Evaluation | | | |
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| 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<br>a. Spotting<br>b. Dissection<br>c. Mounting<br>d. Examination of pond water<br>e. Economic Importance of Insects<br>f. Parasitic Adaptations | 50<br>16<br>08<br>04<br>10<br>06<br>06 |
| **Total** | **40** | | **60** |
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| **Any remarks/suggestions:** | | | |

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