



# SMRJ Government College, Siwani (Bhiwani)

(Affiliated to Chaudhary Bansi Lal University, Bhiwani)

Session: 2024-25

## Lesson Plan

(Department of Zoology)



|                               |                     |  |
|-------------------------------|---------------------|--|
| Teacher: Dr. Pooja Rani       | Course Type & Title | : CC-1, MCC-1, Animal Diversity of Non-Chordates |
| Class : B.Sc. I               | Course Code         | : B23-ZOO-101 (Theory)                           |
| Semester : 1st                | Credits/ Max. Marks | : 3 (Theory)/70                                  |
| Internal Assessment Marks: 20 | End Term Exam Marks | :50  |

### Course Outcomes:

After completing this course, the learner will be able to:

- ✓ Understand the importance of taxonomy and structural organization of animals from Protozoa to Hemichordata living in varied habitats.
- ✓ Meticulously analyze the complexity and characteristic features of non-chordates by familiarization with the morphology and anatomy of representatives of various animal phyla.
- ✓ Comprehend the evolutionary history and relationships of different non-chordates functional and structural affinities.
- ✓ Realize the economic importance of non-chordates, their interaction with the environment and role in the ecosystem.
- ✓ Know the significance the diverse habitats, including marine, freshwater and terrestrial.
- ✓ Understand similarities and differences in life functions among various non-chordates.

| Sr. No. | Week/Month, 2024        | Unit/ Topic/ Chapter to be covered  | Assignment/Test/ Remarks, if any |
|---------|-------------------------|---|----------------------------------|
| 1       | 22.07.2024 – 27.07.2024 | Phylum Protozoa: General Characters & classification up to class level  |                                  |
| 2       | 29.07.2024 – 03.08.2024 | Type study of <i>Plasmodium</i> , Phylum Porifera: General Characters & classification up to class level                              |                                  |
| 3       | 05.08.2024 – 10.08.2024 | Type study of <i>Sycon</i>  | Seminar                          |
| 4       | 12.08.2024 – 17.08.2024 | Phylum Coelenterata: General Characters & classification up to class level, Type study of <i>Obelia</i>                               |                                  |
| 5       | 19.08.2024 – 24.08.2024 | Phylum Platyhelminthes & Aschelminthes: General Characters & classification up to class level, Type study of <i>Fasciola hepatica</i> | Quiz                             |
| 6       | 26.08.2024 – 31.08.2024 | Phylum Annelida: General Characters & classification up to class level, Type study Earthworm  | Test                             |
| 7       | 02.09.2024 – 07.09.2024 | Type study Earthworm continues..  |                                  |
| 8       | 09.09.2024 – 14.09.2024 | Phylum Arthropoda: General Characters & classification up to class level, Type study Cockroach  |                                  |
| 9       | 16.09.2024 – 21.09.2024 | Type study Cockroach continues...   |                                  |

|    |                         |  |               |
|----|-------------------------|--|---------------|
| 10 | 23.09.2024 – 28.09.2024 | Phylum Mollusca: General Characters & classification up to class level, Type study Pila          | Assignment    |
| 11 | 30.09.2024 – 05.10.2024 | Type study Pila continues...   |               |
| 12 | 07.10.2024 – 12.10.2024 | Phylum Echinodermata: General Characters & classification up to class level, Type study Sea Star | Mid Term Exam |
| 13 | 14.10.2024 – 19.10.2024 | Type study Sea Star continues....  |               |
| 14 | 21.10.2024 – 26.10.2024 | Phylum Hemichordata: General Characters with examples.   |               |
| 15 | 04.11.2024 – 09.11.2024 | Revision   |               |
| 16 | 11.11.2024 – 16.11.2024 | Revision   | Revision Test |
| 17 | 18.11.2024 – 23.11.2024 | Revision   | Revision Test |

#### Recommended Books:

- ✓ Barnes, R.D. (2006). Invertebrate Zoology, VII Edition, Cengage Learning, India.
- ✓ Pechenik, J. A. (2015). Biology of the Invertebrates. VII Edition, McGraw-Hill Education
- ✓ Ruppert, E.E., Fox, R.S., Barnes, R. D. (2003). Invertebrate Zoology: A Functional Evolutionary Approach. VII Edition, Cengage Learning, India
- ✓ Barnes, R.S.K., Calow, P., Olive, P.J.W., Golding, D.W. and Spicer, J.I. (2002). The Invertebrates: A New Synthesis. III Edition, Blackwell Science
- ✓ Barrington, E.J.W. (2012). Invertebrate Structure and Functions. II Edition, EWP Publishers
- ✓ Kotpal, R.L. (2021). Zoology Invertebrate, Rastogi Publications, Meerut.

*Pooja Rani*  
29/11/24

(Dr. Pooja Rani)

Signature of the teacher concerned



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Session: 2024-25

## Lesson Plan

(Department of Zoology)



|                                  |                     |   |
|----------------------------------|---------------------|---|
| Teacher: Dr. Pooja Rani          | Course Type & Title | : Animal Physiology & Animal Biochemistry |
| Class : B.Sc. II                 | Course Code         | : 20UZOO301 & 20UZOO302 (Paper I & II)    |
| Semester : 3 <sup>rd</sup>       | Credits/ Max. Marks | : 4 (Theory) /50+50                       |
| Internal Assessment Marks: 10+10 | End Term Exam Marks | : 40+40                                   |

**Course Outcomes:** The core course 'Animal Physiology and Biochemistry' aims at providing the following critical learning outcomes:

- ✓ Comprehend and analyze problem-based questions.
- ✓ Develop investigative, communicative, analytical and personal skills with respect to the subject.
- ✓ Recognize and explain how all physiological systems work in unison to maintain homeostasis in the body and feedback loops control the same.
- ✓ Synthesize ideas to make connection between knowledge of physiology and real world situations, including healthy life style decisions and homeostatic imbalances i.e. how physiological mechanisms adapt in response to various external and internal stimuli in order to maintain health.
- ✓ Know the role of regulatory systems viz. endocrine and nervous systems and their amalgamation in maintaining various physiological processes.
- ✓ Understand the concepts of biochemistry and interaction of biomolecules with each other to bring about life processes.
- ✓ Learn control of enzyme activity, its mechanism of action and how a drug might inhibit the enzyme.

| Sr. No. | Week/Month, 2024        | Unit/ Topic/ Chapter to be covered  | Assignment/Test/ Remarks, if any |
|---------|-------------------------|---|----------------------------------|
| 1       | 22.07.2024 – 27.07.2024 | Physiology of digestion in alimentary canal, Absorption of Carbohydrates  |                                  |
| 2       | 29.07.2024 – 03.08.2024 | Absorption of proteins & lipids, Pulmonary ventilation  |                                  |
| 3       | 05.08.2024 – 10.08.2024 | Respiratory volumes & capacities, Transport of oxygen & carbon dioxide in blood, Composition of blood, Homeostasis      | Assignment                       |
| 4       | 12.08.2024 – 17.08.2024 | Structure of heart, Origin & conduction of cardiac impulse, Cardiac cycle   |                                  |
| 5       | 19.08.2024 – 24.08.2024 | Structure of nephron, Physiology of excretion, Structure of Neuron, Resting membrane potential, graded potential        | Test                             |
| 6       | 26.08.2024 – 31.08.2024 | Origin of action potential & propagation in myelinated & non-myelinated nerve fibers, Ultrastructure of skeleton muscle | Seminar                          |
| 7       | 02.09.2024 – 07.09.2024 | Molecular & chemical basis of muscle contraction, Physiology of male reproduction, Hormonal control of spermatogenesis  |                                  |



|    |                         |  |               |
|----|-------------------------|--|---------------|
| 8  | 09.09.2024 – 14.09.2024 | Physiology of female reproduction, Hormonal control of menstrual cycle in human, Structure and function of pituitary           | Test          |
| 9  | 16.09.2024 – 21.09.2024 | Structure and function of thyroid, parathyroid, pancreas and adrenal gland, Structure & biological importance of carbohydrates |               |
| 10 | 23.09.2024 – 28.09.2024 | Glycolysis, Krebs's cycle and Electron transport chain   |               |
| 11 | 30.09.2024 – 05.10.2024 | Lipids & their metabolism  |               |
| 12 | 07.10.2024 – 12.10.2024 | Structure, classification, function & properties of proteins, Nomenclature, classification & mechanisms of enzyme              | Assignment    |
| 13 | 14.10.2024 – 19.10.2024 | Transport through bio-membranes, Buffers   |               |
| 14 | 21.10.2024 – 26.10.2024 | Structure, function & types of DNA, RNA & their components   | Seminar       |
| 15 | 04.11.2024 – 09.11.2024 | Central dogma  |               |
| 16 | 11.11.2024 – 16.11.2024 | Revision   | Revision Test |
| 17 | 18.11.2024 – 23.11.2024 | Revision   | Revision Test |

#### Recommended Books/ E resources:

- ✓ Tortora, - G.J. and Derrickson, B.H. (2009) Principles of Anatomy and Physiology, XII Edition, John Wiley & Sons, Inc.
- ✓ Widmaier, E.P., Raff, H. and Strang, K.T. (2008) Vander 's Human Physiology, XI Edition., McGraw Hill
- ✓ Berg, J. M., Tymoczko, J. L. and Stryer, L. (2006) Biochemistry. VI Edition. W.H Freeman and Co.
- ✓ Nelson, D. L., Cox, M. M. and Lehninger, A.L. (2009). Principles of Biochemistry. IV Edition. W.H. Freeman and Co.
- ✓ Murray, R.K., Granner, D.K., Mayes, P.A. and Rodwell, V.W. (2009). Harper's Illustrated Biochemistry. XXVIII Edition. Lange Medical Books/Mc Graw3Hill.
- ✓ Guyton, A.C. and Hall, J.E. (2011). Textbook of Medical Physiology, XII Edition, Harcourt Asia Pvt. Ltd/ W.B. Saunders Company
- ✓ <https://swayam.gov.in/courses/5371-jan-2019-animal-physiology>
- ✓ <https://swayam.gov.in/course/3712-animal-physiology>
- ✓ <https://swayam.gov.in/courses/5366-jan-2019-biochemistry>
- ✓ <https://swayam.gov.in/course/1405-biochemistry>
- ✓ <https://swayam.gov.in/courses/5638-biochemistry>
- ✓ <https://vle.du.ac.in>

(Dr. Pooja Rani)

Signature of the teacher concerned



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## Lesson Plan

(Department of Zoology)



Teacher: Dr. Pooja Rani

Class : B.Sc. III

Semester : 5th

Internal Assessment Marks: 10+10

Course Type & Title : Aquaculture & Economic Zoology

Course Code : 20UZOO504 & 20UZOO505 (Paper I & II)

Credits/ Max. Marks : 4 /50+50

End Term Exam Marks : 40+40

### Course Outcomes- Students will be able to:

- ✓ Learn about the concept of pest and pest status.
- ✓ Understand the difference between various types of pests and extent of damage caused by them.
- ✓ Gain knowledge about important pests of crops, fruits, vegetables, stored grains and insects of medical importance.
- ✓ Analysis of varied types of control measures for management of pest populations and list suitable control measures, specific for every pest.
- ✓ Preservation and artificial insemination in cattle; Induction of early puberty and synchronization of estrus in cattle.
- ✓ General idea about poultry farming.
- ✓ Acquired sufficient skills and knowledge in aquaculture reproduction, hatchery management
- ✓ Employ scientific techniques, practical skills and management strategies aimed at improving culture resource management Skilled to analyze the quality assessment and post-harvest technology to manage live fish and fishery products.
- ✓ Ability to diagnose aquaculture related diseases and manage health and safety issues in aquaculture ventures
- ✓ Exploit and utilize wisely fisheries resources using appropriate and innovative fishing methods.
- ✓ Apply post-harvest practices that are compliant to international standards for food safety and quality

| Sr. No. | Week/Month, 2024        | Unit/ Topic/ Chapter to be covered  | Assignment/Test/ Remarks, if any |
|---------|-------------------------|---|----------------------------------|
| 1       | 22.07.2024 – 27.07.2024 | Life history, control & damage caused by <i>Helicoverpa armigera</i> , <i>Pyrilla perpusilla</i> , <i>Papilio demoleus</i> , <i>Callosobruchus chinensis</i>    |                                  |
| 2       | 29.07.2024 – 03.08.2024 | Life history, control & damage caused by <i>Sitophilus oryzae</i> and <i>Tribolium castaneum</i> , Lac culture  |                                  |
| 3       | 05.08.2024 – 10.08.2024 | Life history, medical importance & control of <i>Pediculus humanus corporis</i> , <i>Anopheles</i> , <i>Culex</i> , <i>Aedes</i> and <i>Xenopsylla cheopsis</i> | Assignment                       |
| 4       | 12.08.2024 – 17.08.2024 | Sericulture, Preservation & artificial insemination in cattle, Induction of early puberty & synchronization of estrus in cattle                                 |                                  |



|    |                         |  |               |
|----|-------------------------|--|---------------|
| 5  | 19.08.2024 – 24.08.2024 | Piggery, Poultry farming, Principles of poultry breeding,  | Test          |
| 6  | 26.08.2024 – 31.08.2024 | Management of breeding stock and broilers, Processing and preservation of eggs                             |               |
| 7  | 02.09.2024 – 07.09.2024 | General description of fish, habitat, habits & reproduction in fishes, Types of fins & their modifications | Seminar       |
| 8  | 09.09.2024 – 14.09.2024 | Types of scales, Use of scales in classification & age determination in fishes, Gills & gas exchange       |               |
| 9  | 16.09.2024 – 21.09.2024 | Swim bladder, buoyancy, milt, spawn, fry, fingerlings, brood fishes  |               |
| 10 | 23.09.2024 – 28.09.2024 | Electric organs, Bioluminescence, Mechanoreceptors, Schooling, Parental care, Migration                    | Assignment    |
| 11 | 30.09.2024 – 05.10.2024 | Inland & marine fisheries, Fish diseases, Fishing crafts & gears   |               |
| 12 | 07.10.2024 – 12.10.2024 | Depletion of fisheries resources, sustainable aquaculture, Prawn culture                                   | Test          |
| 13 | 14.10.2024 – 19.10.2024 | Pearl culture, Pen & Cage culture, Polyculture   |               |
| 14 | 21.10.2024 – 26.10.2024 | Composite fish culture, Brood stock management   | Seminar       |
| 15 | 04.11.2024 – 09.11.2024 | Induced breeding of fish   |               |
| 16 | 11.11.2024 – 16.11.2024 | Revision   | Revision Test |
| 17 | 18.11.2024 – 23.11.2024 | Revision   | Revision Test |

#### Recommended Books/ E resources:

- ✓ Park, K. (2007). Preventive and Social Medicine. XVI Edition. B.B Publishers.
- ✓ Arora, D.R. and Arora, B. (2001). Medical Parasitology. H Edition. CBS Publications and Distributors.
- ✓ Atwal, A.S. (1986). Agricultural Pests of India and South East Asia, Kalyani Publishers.
- ✓ Hafez, E. S. E. (1962). Reproduction in Farm Animals. Lea & Fabiger Publisher
- ✓ Dunham R.A. (2004). Aquaculture and Fisheries Biotechnology Genetic Approaches. CABI publications, U.K.
- ✓ Pedigo, L.P. (2002). Entomology and Pest Management, Prentice Hall.
- ✓ Fish & Fisheries of India by Jhingran, V.G., Hindustan Publishing Corporation, New Delhi, 1991.
- ✓ C.B.L. Srivastava, Fish Biology, Narendra Publishing House.
- ✓ J.R. Norman, A History of Fishes, Hills and Wang Publishers.

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