

UNIVERSITY DEPARTMENT OF ZOOLOGY

Vinoba Bhave University, Hazaribag

**FRAMED UG SYLLABUS OF ZOOLOGY  
UNDER  
NEW EDUCATION POLICY  
2022-2026  
SEMESTER-I**



*With effect from 2022-26*

# UG COURSE UNDER NEP -2022

## PROPOSED SYLLABI FOR NEP Four Years B.Sc. Hons. In Zoology (Eight Semester Course)

### SEMESTER-I

Semester	Common, Introductory, Major, Minor, Vocational & Internships courses			Full Marks	Pass marks
	Code	Papers	Credits	(I+E)	
I	IRC-1	Introductory regular cours-1	03	100	40
	IVS-1A	Introductory Vocational studies-I	03	100	40
	MJ-1	Major Paper –I (Disciplinary/Interdisciplinary Major)	04+02=06	Theory 75(15+60) Practical - 25(5+20)	40
				250	

#### General Instructions to question setter:

There will be no internal for the introductory certificate course and introductory vocational studies  
For major, there will be one internal semester Examination for both practical & Theory. End semester will be applicable for all.

Semester Internal Examination(SIE) – There will be two groups  
A- short answer type (Compulsory ) of 5 marks and group B will contains five questions out of which two questions are to attempt bearing 5 marks each

#### Internal semester Examination

ITC- no

IVS-IA- no

MJ-1 FM=15 theory; 05 Practical

#### End Semester examination (ESE)

ITC –FM=100

IVS-1A-FM=100

MJ-1-FM=60 theory; 20 marks practical

**B.Sc. Semester I**

**Credits 3**

**Hrs: 45**

**FM-100**

#### INTRODUCTORY ZOOLOGY-[Code IRC]

1. Animal diversity Characterization & Classification .....3hrs
2. Important Branches of Zoology .....1hr
3. Eco-biology .....4 hrs
  - A. Ecosystem & Its Types
  - B. Biotic And Abiotic Factors
  - C. Ecological interactions
4. Medical Zoology – Animal Pathogens & Pathogenicity .....5 hrs

- A. Common Protozoans parasites – *Plasmodium* , *Entamoeba*
- B. Common Helminthes Parasites - Tapeworm *Ascaris* & *Wuchereria*
- 5. Biochemistry: Structure Classification & Function ..... 5hrs
  - A. Protein ,
  - B. Carbohydrates
  - C. Lipids
  - D. Nucleic Acids -
- 6. Cell Biology & Genetics –.....6 hrs
  - A. The structure of typical animal cell
  - B. cell organelles function
  - C. cell division
  - D. The principles of inheritance-Mendel’s laws and the deviations.
- 7. Economic Zoology –.....6hrs
  - A. Sericulture
  - B. Apiculture
  - C. Pisciculture &
  - D. Lac culture
- 8. Tools & Techniques - .....7hrs
  - A. Common Biological tools – Microscope and its Types
  - B. Microtome and its use
  - C. Camera Lucida & Micrometers
  - D. Colorimeter
  - E. Centrifuge
  - F. Weighing Balance
- 9. Museology & Tissues Processing- .....4hrs
  - A. Preservation of Museum specimens
  - B. Tissues Fixation , Dehydration ,embedding ,section cutting & Staining
- 10. Molecular Biology & Biotechnology.....3hrs
  - A. Central Dogma of Molecular Biology
  - B. Cloning and Genetically Modified Organisms – brief concept
- 11. Applied Zoology – .....5hrs
  - A. Primary & Secondary Data
  - B. Measurement of central Tendency and Data representation.
  - C. Introduction to bioinformatics & Application
  - D. Digital Library

**Suggested Books**

# Semester I

Major Zoology [MJZ-1]

FM=60 (External)  
Internal 15

## Instruction for Internal Semester Examination

FM 15 +5(T+P)

There will be two groups A&B. A will contain short answer type and will be compulsory of 5 marks

Group B will consist four question of which two are to be answered. Each carry 5 mark.

## End Semester Examination (ESE)

There will two groups of questions. Group A is compulsory which will consists three questions. Q. No. 1 will be very short answer type consisting five questions of 1 mark each. Q.no. 2 & 3 will be short answer type of 5 marks. Group B will contain descriptive types five questions of fifteen marks each out of which three are to be answered.

## Semester -I MJZ-1

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Systematic and Diversity of Non-Chordate

Credit -4+2 Hours of teaching -90

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### UNIT-1 Non-Chordates: Characters & Classification

General characters and classification of different phyla of Non Chordates up to classes with examples showing distinctive / adaptive features

### UNIT-2 Non Chordates: Protists to Pseudocolmates

2.1 **Phylum Protozoa:** General account and reproduction

2.2 **Phyla Porifera:** Canal system in Porifera

2.3 **Coelentrate:** Obelia Life cycle and metagenesis,  
Coral Reefs –types, formation and distribution

2.4 **Platyhelminthes & Aschelminthes:** Parasitic Adaptation, Life Cycle and Pathogenecity

### UNIT-3 Non Chordate: Coelomates

3.1 **Annelida:** Segmental organs (Coelomo-ducts & meta-nephridia) in annelid

3.2 **Arthropoda:** Larval form of Crustacean

3.3 **Mollusca:** Torsion and Detorsion in Gastropods

3.4 **Echinoderm:** Water vascular System in Asterias

## Major Practical -MJZP-01 Credit 02

### Practical Based on MJZ-01)

(Credit 4 )

Hours of Practical - 2X15=30 hrs

Part A: Systematics and Diversity of Non Chordates

Semester-I

Practical

FM: 20 External + Internal 05

Practical	Marks Distribution
1. Dissection :	05
2. Slide Preparation :	03
3. Spotting :	2X4 = 08
a. Slides (02)	2X2
b. Museum Specimens (02)	2X2
4. Class record	2
5. <u>Viva -Voce</u>	<u>2</u>
	<u>20</u>

### Suggested Practicals

#### 1. Study of Available Museum Specimens of animals

- Sycon (As an example of parazoa), Hydra ,Fasciola ,Ascaris, Hirudinaria ,Hermit Crab, Scorpion, Unio, Sepia, Aplysia, Loligo, Sea Urchin , Ophiothrix (Brittle star)
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#### 2. Study of the following through permanent slides

1. Paramecium Slide (WM)
2. Gemmules of sponges
3. Conjugation in Paramecium,
4. Sporocyst of Fasciola with developing Redia, Cercaria and Metacercaria larvae
5. Nauplius ,Metanauplius, Cypris, Megalopa and Zoea larvae of Crustacea

#### 3. Dissection:

1. Dissection of Digestive and nervous system of Earthworm
2. Dissection of digestive system of *Palaemon* and Nervous system of *Palaemon*

#### 4. Mounting

Mounting of Nephridia & ovary of earth worm, trachea and salivary gland of *Periplaneta americana*, Cephalic appendages of *Palaemon*

Dr K.K.Gupta

Mr Y Jaggi

Dr J.P.Sanyal

Dr Manoj Kumar

Dr Rajendra Mistry

Dr. G.C Baskey

**Vermi-composting/vermi-culture Credit-03**

1. Introduction to vermi-culture.-Definition, meaning, history, economic important, their value in maintenance of soil structure, role as four R's of reduce, reuse, recycle, restore.
2. Collection of native earth worm species to study habit and habitat.
3. Keys to identify different species of earth worm. External and Life cycle of *Eisenia fetida* and *Eudrilus eugeniae*.
4. Digestive and reproductive system.
5. Study of vermicomposting equipments and devices.
6. Preparation of vermi beds and their maintenance.
7. Study of different vermicomposting methods.
8. Harvesting, separation of worms, packaging, transport and storage of Vermicompost.
9. Vermi-wash collection and processing.
10. Small scale earth worm farming for home gardens and studying the effect of Vermicompost on garden plants.
11. Budget and cost scenario of Vermiculture.
12. Diseases and natural enemies of earth worms and their control measures.
13. Role of vermitechnology in environmental protection.
14. Economics and Marketing of Vermicompost and vermi wash.
15. Composition of Vermicompost for plants, comparison with other fertilizers
16. Visit to Vermiculture farm to acquaint with latest techniques

**Dr K.K.Gupta**

**Mr Y Jaggi**

**Dr J.P.Sanyal**

**Dr Manoj Kumar**

**Dr Rajendra Mistry**

**Dr. G.C Baskey**