

# Criterion 1.3.2

A.S: 2024-25

EXTRACT OF AFFILIATING UNIVERSITY  
CURRICULUM HAVING PROJECT WORK  
/ FIELDWORK / INTERNSHIP

- ✓ Botany
- ✓ Computer Science
- ✓ Geography
- ✓ History
- ✓ Zoology
- ✓ Social Work

Number of courses that include  
experiential learning through project  
work/field work/internship for the  
year2024-25

**BOTANY- EXTRACT  
FROM BANKURA  
UNIVERSITY SYLLABUS**




### 4.1. DSE-1 P1: Natural Resource Management

(Practical: Marks 15/Credits 2)

1. Estimation of solid waste generated by a domestic system (biodegradable and non biodegradable) and its impact on land degradation.
2. Collection of data on forest cover of specific area.
3. Measurement of dominance of woody species by DBH (diameter at breast height) method.
4. Calculation and analysis of ecological footprint.
5. Ecological modeling.
6. Field visits to local forest/river bed/water bodies/or related field.
7. Water potability test.

#### Suggested Readings

1. Vasudevan, N. (2006). Essentials of Environmental Science, Narosa Publishing House, New Delhi.
2. Singh, J. S., Singh, S.P. and Gupta, S. (2006). Ecology, Environment and Resource Conservation. Anamaya Publications, New Delhi.
3. Rogers, P.P., Jalal, K.F. and Boyd, J.A. (2008). An Introduction to Sustainable Development. Prentice Hall of India Private Limited, New Delhi.

  
DEPARTMENT OF BOTANY  
Sonamukhi, Bankura



**Major DSC 3: Archegoniate & Palaeobotany**

**Course Code: S/BOT/301/MJC-3**

**Credit: 4**

**Practical**

1. *Marchantia*- Vertical section of thallus through gemma cup, whole mount of gemmae; Vertical section of antheridiophore, archegoniophore; Longitudinal section of sporophyte.
2. *Anthoceros*- Vertical section of thallus; T.S. and L.S. of sporophyte.
3. *Funaria*- Antheridial and archegonial heads from permanent slides; Longitudinal section of capsule.
4. *Selaginella*- Transverse section of stem; Longitudinal section of strobilus.
5. *Equisetum*- Morphology, transverse section of internode; Longitudinal section of strobilus, transverse section of strobilus.
6. *Pteris*- Morphology; Transverse section of rachis; Vertical section of sporophyll; Whole mount of sporangium; Whole mount of spores.
7. *Cycas*- Whole mount of microsporophyll; Transverse section of rachis; Vertical section of leaflet; Whole mount of spores; Longitudinal section of ovule (from permanent slides).
8. *Pinus*- Transverse section of Needle; Transverse section of stem; Longitudinal section of transverse section of male cone (from permanent slides).
9. **Identification**- Petrified fossil (*Calamites* and *Lyginopteris*), Impression fossil (*Glossopteris*).
10. Botanical excursions are to be organized in botanically rich area, field report and photographic documents of plant specimens to be submitted during practical examination (No need to submit any living, preserved or herbarium specimen).

**Suggested Readings**

1. Vashistha, P.C., Sinha, A.K., Kumar, A. (2010). Pteridophyta. S. Chand, Delhi, India.
2. Bhatnagar, S.P. & Moitra, A. (1996). Gymnosperms. New Age International Publishers, New Delhi, India.
3. Parihar, N.S. (1991). An introduction to Embryophyta: Vol. I. Bryophyta. Central Book Depot. Allahabad.
4. Raven, P.H., Johnson, G.B., Losos, J.B., Singer, S.R. (2005). Biology. Tata McGraw Hill, Delhi.
5. Vanderpoorten, A. & Goffinet, B. (2009). Introduction to Bryophytes. Cambridge University Press.
6. Stewart W.N., Rothwell, G.W. (2005). Paleobotany and the Evolution of Plants, 2nd Edition, Cambridge University Press (USA).
7. Biswas, C., Johri, B.M. (1997). The Gymnosperms. Narosa Publishing House, Delhi.

## Minor 3: Archegoniate & Palaeobotany

Course Code: S/BOT/303/MN-3

Credit: 4

### Practical

1. *Marchantia*- Vertical section of thallus through gemma cup, whole mount of gemmae; Vertical section of antheridiophore, archegoniophore; Longitudinal section of sporophyte.
2. *Anthoceros*- Vertical section of thallus; T.S. and L.S. of sporophyte.
3. *Funaria*- Antheridial and archegonial heads from permanent slides; Longitudinal section of capsule.
4. *Selaginella*- Transverse section of stem; Longitudinal section of strobilus.
5. *Equisetum*- Morphology, transverse section of internode; Longitudinal section of strobilus, transverse section of strobilus.
6. *Pteris*- Morphology; Transverse section of rachis; Vertical section of sporophyll; Whole mount of sporangium; Whole mount of spores.
7. *Cycas*- Whole mount of microsporophyll; Transverse section of rachis; Vertical section of leaflet; Whole mount of spores; Longitudinal section of ovule (from permanent slides).
8. *Pinus*- Transverse section of Needle; Transverse section of stem; Longitudinal section of transverse section of male cone (from permanent slides).
9. **Identification**- Petrified fossil (*Calamites* and *Lyginopteris*), Impression fossil (*Glossopteris*).
10. Botanical excursions are to be organized in botanically rich area, field report and photographic documents of plant specimens to be submitted during practical examination (No need to submit any living, preserved or herbarium specimen).

#### Suggested Readings

1. Vashistha, P.C., Sinha, A.K., Kumar, A. (2010). Pteridophyta. S. Chand, Delhi, India.
2. Bhatnagar, S.P. & Moitra, A. (1996). Gymnosperms. New Age International Publishers, New Delhi, India.
3. Parihar, N.S. (1991). An introduction to Embryophyta: Vol. I. Bryophyta. Central Book Depot. Allahabad.
4. Raven, P.H., Johnson, G.B., Losos, J.B., Singer, S.R. (2005). Biology. Tata McGraw Hill, Delhi.
5. Vanderpoorten, A. & Goffinet, B. (2009). Introduction to Bryophytes. Cambridge University Press.
6. Stewart W.N., Rothwell, G.W. (2005). Paleobotany and the Evolution of Plants, 2nd Edition, Cambridge University Press (USA).
7. Biswas, C., Johri, B.M. (1997). The Gymnosperms. Narosa Publishing House, Delhi.

**COMPUTER SCIENCE-  
EXTRACT FROM  
BANKURA UNIVERSITY  
SYLLABUS**

### SEMESTER – VI

Course Code	Course Title	Credit	Marks			No. of Hours			
			I.A.	ESE		Total	Lec.	Tu.	Pr.
SH /CSC/ 601/C-13	Artificial Intelligence	6	10	40		50	4	-	4
				T:25	L:15				
SH /CSC/ 602/C-14	Computer Graphics	6	10	40		50	4	-	4
				T:25	L:15				
SH /CSC/ 603/DSE-3	Any one of the following ● Cryptographic Applications ● Data Analytics	6	10	40		50	4	-	4
				T:25	L:15				
SH /CSC/ 604/DSE-4	Project Work	6	10	40		50	4	-	4
				T:25	L:15				
<b>Total in Semester – VI</b>		<b>24</b>	<b>40</b>	<b>160</b>		<b>200</b>			

Bankura University B.Sc. COMPUTER SC (Hons) Revised CBCS Syllabus w.e.f. 2022-23

SH= Science Honours CSC = Computer Science, ACSHP= Arts Commerce Science Honours Programme, C= Core Course, AECC= Ability Enhancement Compulsory Course, SEC= Skill Enhancement Course, GE= Generic Elective, DSE= Discipline Specific Elective IA= Internal Assessment, ESE= End-Semester Examination, Lec. =Lecture, Tu.= Tutorial, and Prc.=Practical

#### **VII. Project Work/Dissertation (DSE-IV)**

**Course Learning Outcomes:** After successful completion of the Course a student will be able to:

- Apply fundamental and disciplinary concepts and methods in ways appropriate to their principal areas of study.
- Demonstrate skill and knowledge of current information and technological tools and techniques specific to the professional field of study.

**Practical Based:**

- This option is to be offered only in 6<sup>th</sup> Semester.
- The students will be allowed to work on any project based on the concepts studied in core/elective or skill based elective courses.
- The group size should be maximum of three (03) students.
- Each group will be assigned a teacher as a supervisor who will handle both their theory as well lab classes.
- A maximum of Four (04) projects would be assigned to one teacher.
- Theory classes will cover project management techniques.

**GEOGRAPHY- EXTRACT  
FROM BANKURA  
UNIVERSITY SYLLABUS**



### Instructions for Field Report Preparation

1. Each student will prepare an individual report based on primary data collected from field survey and secondary data collected from different sources for either a rural area (mouza), or an urban area (municipal ward), or a watershed based on cadastral, municipal or any other base maps to **study related specific problems**.
2. The duration of the field work shall not exceed 10 days.

**Report writing with the following Tentative Chapter Schemes:**

**Preface & Acknowledgement**

**Executive Summary**

**Introduction:** Objectives, Extent and Space Relations, Data sources and Methodology

**Physical Environment:** Lithology, Relief/Topography, Drainage, Slope, Climate, Soil, Vegetation etc.

**Socio Economic Environment:** Population Characteristics, Occupational Structure, Ethnic and Religious Composition, Income and Expenditure, any other aspects which may be deemed fit.

**Results and Discussion/Presentation**

**Problems and Prospects**

**Conclusion**

**References (APA format)**

**Appendix:** Survey Questionnaire(s), Additional Tables if any

3. **Design & Word Limit:** Computer Typed, Line Spacing 1.5 Font-Aria/ Times New Roman/ Calibri, Size-12, Word Limit: 5000 (Excluding Tables and Appendix).
4. **Submission:** A copy of the bound report, duly signed by the concerned teacher/supervisor, must be submitted at the time of examination.
5. **Presentation**  
Individual student has to submit one Power Point Presentation on the Report and has to present in front of External Examiner with the following slides:
  - a) Title
  - b) Aims and Objectives
  - c) Data Sources and Methodology
  - d) Important Diagrams and Maps included in the report
  - e) Major Findings
  - f) SuggestionsTime allotted for Presentation will be not more than 10 minutes followed by interactive session of not more than 5 minutes.  
A CD/or any other soft form of the ppt file has to be submitted mentioning the UID Number of each student. The same has to be submitted by the Centre in Charge to the Chairperson of the said paper.

**HISTORY- EXTRACT  
FROM BANKURA  
UNIVERSITY SYLLABUS**

**Skill Enhancement Course III-  
Documentation & Visual Culture:-****Objectives:**

This course will enable students learning in developing skills in critical analysis, expository writing, visual-arts practices, and public speaking.

The course has three primary objectives: (1) to develop a critical vocabulary for the analysis and interpretation of visual images; (2) to recognize cultural and historical contexts of the theories and practices of visual studies, including technical, economic, social, philosophical, and military influences and (3) to use these analytical skills in written, oral, and visual responses to visual images and cultures.

**Outcome:**

After completion of this course, students will be able to: Comprehend and apply a critical vocabulary for visual literacy; Describe, discuss, and analyze a variety of visual forms and media from different cultural and historical contexts; Describe, discuss, and apply selected theoretical approaches to visual cultures; Apply analytic thinking, critical vocabulary, and creative observation to projects.

**Evaluation:**

Internal Assessment- 10 marks.

2 marks x 5= 10 marks (short descriptive answers within 50 words).

5 marks x 4= 20 marks (within 100 words).

10 marks x 1= 10 marks (within 500 words).

**Module I.** Definitions: documentation, visual culture, fieldwork, internship and training, difference between internship and training

**Module II.** Key Concepts: Politics of documentation, pre-colonial and post-colonial contexts of visual culture

**Module III.** Art: the history of Indian art & sculpture in the 20 th century, major artists & sculptors

**Module IV.** Photographs: The history of photography in India, major photographers

**Module V.** Indian Films: the history of Bengali and Hindi films in pre-colonial and post-colonial contexts, Videos and digital formats

**Suggested Readings:**

Gayatri Sinha, ed, *Art & Visual Culture in India: 1857-2007*, Mumbai, Marg Publications, 1<sup>st</sup> Edition, 2009

Sinha, Gayatri, *Indian Art; An Overview*, new Delhi, Rupa, 2003

Geeta Kapur, *When was Modernism Introduced; Essays on Contemporary Cultural Practice in India*, Delhi, Delhi, Tulika Publications, 2020,

Cohn, Bernard, "Representing Authority in Victorian India", in *An Anthropologist Among Historians and Other Essays*, Delhi, OUP, 1998

Pinney, Christopher, *Camera Indica; The Social Life of Indian Photographs (Envisioning Asia)*, London, Reaktion Books, 2013

Pinney, Christopher, *Photos of the Gods: The Printed Image and Political Struggle in India*,

**ZOOLOGY- EXTRACT  
FROM BANKURA  
UNIVERSITY SYLLABUS**

**Number of courses of ZOOLOGY that include experiential learning through project work / field work during 2024-25**

Sl. No.	Semester/ Part	Course Code	Course Title
		<b>HONOURS</b>	
1	SEM V	UG/ZOOH / 503/DSE-1	DSEP: Animal Behaviour & Chronobiology Lab
2	SEM V	UG/ZOOH / 504/DSE-2	DSEP: Biology of Insecta Lab
3	SEM VI	UG/ZOOH/ 601/C-13	CP-13: Developmental Biology Lab
4	SEM VI	UG/SC/ 602/C-14	CP-14: Evolutionary Biology Lab
5	SEM VI	UG/ZOOH/ 603/DSE-3	DSEP: Fish & Fisheries Lab
		<b>PROGRAMME</b>	
6	SEM V	UGP/S.C./501/ DSE-1A	Insect Vectors and Diseases Lab
7	SEM VI	UGP/S.C. / 601/DSE- 1B	DSEP P 2b Aquatic biology Lab
		<b>ZOOLOGY MAJOR</b>	
8	SEM III	S/ZOO/301/MJC-3	Ecology Practical
9	SEM IV	S/ZOO/403/MJC-7	Developmental Biology Practical
10	SEM IV	S/ZOO/404/MJC-8	Evolutionary Biology Practical



Bankura University

B.Sc. Zoology (Honours)

CBCS w.e.f. 2018-19

**REVISED CBCS**  
**SYLLABUS FOR**  
**THREE YEARS UNDER-GRADUATE COURSE**  
**IN**  
**Zoology (HONOURS)**  
*(w.e.f. 2018-19)*



***BANKURA UNIVERSITY***  
***BANKURA***  
***WEST BENGAL***  
***PIN 722155***

# DSE-1 P: Animal Behaviour & Chronobiology Lab



Bankura University

B.Sc. Zoology (Honours)

CBCS w.e.f. 2018-19

4.2 DSE PI - Animal Behaviour and Chronobiology Lab

2 Credits

## Animal Behaviour and Chronobiology Lab

### Practicals

1. Study of nests and nesting habits of the birds and social insects.
2. Study of the behavioural responses of wood lice to dry and humid conditions.
3. Study of geotaxis behaviour in earthworm.
4. Study of the phototaxis behaviour in insect larvae.
5. Study of circadian functions in humans (daily eating, sleep and temperature patterns).
6. Visit to Forest/ Wild life Sanctuary/Biodiversity Park/Zoological Park to study behavioural activities of animals and prepare a short report
7. Submission of Laboratory Note Book

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### Distribution of marks

	<b>Full marks: 15</b>
1. One experiment (From 3 or 4)	3
2. Project report (any one from item no. 1 or 2)	5
3. Report on excursion (Item 6)	5
4. Laboratory note book (From 3,4 or 5)	2

## DSE- 2 P: Biology of Insecta Lab



Bankura University

B.Sc. Zoology (Honours)

CBCS w.e.f. 2018-19

4.4 DSE P2 Biology of Insecta Lab

2 Credits

### Biology of Insecta

#### Practicals

1. Identification of life cycle of Mosquito
2. Identification of different kinds of antennae, legs and mouth parts of insects (Cockroach, Praying Mantis, Mosquito)
3. Mounting of wings, larval spiracles and genitalia of any insects (House Fly)
4. Methodology of collection, preservation of insects.
5. Project report: morphological studies of various castes of *Apis sp.*, *Camponotus sp.*, *Odontotermes sp.*
6. Identification of any three major insect pests of paddy (*Scirpophaga*, *Leptocoriza*, and *Hispa*) and their damages
7. Identification of Mulberry silk moth (life cycle stages)
8. Submission of Laboratory Note Book.

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#### Distribution of marks

Full marks: 15

- |  |          |
|--|----------|
| 1. Spot identification with economic importance (any 2; one from each Item no.6 & 7) | 4 (2×2)* |
| 2. Identification with reason (any two, from 1 and 2)                                | 4 (2×2)* |
| 3. Mounting (any one from Item no. 3)  | 2        |
| 4. Project report (any one from Item 5 )   | 3        |
| 5. Submission of laboratory note book:   | 2        |

#### \*Note

- Q 1. 1 mark for identification and 1 mark for economic importance.
- Q2. ½ mark for identification and 1½ mark for reasons.

# CP-13: Developmental Biology Lab



Bankura University

B.Sc. Zoology (Honours)

CBCS w.e.f. 2018-19

3.26 Core P13 Developmental Biology Lab

2 Credits

## Developmental Biology

### Practicals

1. Identification of whole mounts of developmental stages of chick through permanent slides: 24, 48 and 72 hours of incubation.
2. Identification of the developmental stages and life cycle of *Drosophila* from stock culture
3. Identification of different sections of placenta (epitheliochorial, endotheliochorial and hemochorial) (photomicrograph/ slides)
4. Project report on *Drosophila* culture/chick embryo development
5. Submission of Laboratory Note Book

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### Distribution of marks

	Full marks: 15
1. Identification with reasons (any three) (From Item no. 1,2 & 3)	9 (3× 3) *
2. Project Report (From Item no. 4):	4
3. Laboratory note book:	2

### \*Note:

Q1. Identification: 1 mark and reasons: 2 marks

# CP-14: Evolutionary Biology Lab



Bankura University

B.Sc. Zoology (Honours)

CBCS w.e.f. 2018-19

3.28 Core P 14 Evolutionary Biology Lab

2 Credits

## Evolutionary Biology

### Practicals

1. Identification of major group of fossils from models/ pictures (Petrified fossil, molds, casts, carbon film, trace fossil)
2. Study of homology and analogy from suitable specimens (Birds and mammals)
3. Study and verification of Hardy-Weinberg Law by chi square analysis
4. Graphical representation and interpretation of data of height/ weight of a sample of 50 humans in relation to their age and sex.
5. Submission of Laboratory Note Book

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### Distribution of marks

	Full marks: 15
1. Identification with reasons (any two) (From Item no. 1 & 2)	4 (2× 2)*
2. One Problem (From Item no. 3):	5
3. Project report (From Item no.4)	4
4. Submission of laboratory note book:	2

### \*Note:

Q1. Identification: 1 mark and reasons: 1 marks

# DSE-3 P: Fish & Fisheries Lab



Bankura University

B.Sc. Zoology (Honours)

CBCS w.e.f. 2018-19

4.8 DSE P4 - Fish and Fisheries Lab

2 Credits

## Fish and Fisheries Lab

### Practicals

1. Identification of *Potromyzon*, *Myxine*, *Pristis*, *Chimaera*, *Exocoetus*, *Hippocampus*, *Gambusia*, *Labeo*, *Heteropneustes*, *Anabas*
2. Identification of different types of scales (through permanent slides).
3. Morphometric and meristic characters of fishes
4. Water quality criteria for Aquaculture: Assessment of pH, conductivity, Total solids, Total dissolved solids
5. Dissect and display of air breathing organs in *Channa*, *Heteropneustes*, *Anabas* and *Clarias*
6. Project Report on a visit to any fish farm/ pisciculture unit/Zebrafish rearing Lab.
7. Submission of Laboratory Note Book.

### Distribution of Marks

	Full marks: 16
1. Identification with reasons (any three) (two from item No.1 & one from item 2)	6 [2×3] *
2. One dissection from item 5 or one experiment from item 4:	3
3. Project Report	4
4. Submission of laboratory note book:	2

### \*Note

Q1. 1% mark for identification and 1% marks for characters. In case of item (1) only genus characters have to be mentioned

### Suggested Readings

Ghosh, K.C. and Manna, B. (2015): Practical Zoology, New Central Book Agency, Kolkata

Poddar T.K.B. Mukherjee & S. K. Das (2002) An Advanced Laboratory Manual of Zoology, Laxmi Publications

Sinha, J.K., Chatterjee, A.K. and P. Chattopadhyay (2015) Advanced Practical Zoology, Books & Allied (P) Ltd



**REVISED CBCS SYLLABUS**  
**FOR**  
**THREE YEARS UNDER-GRADUATE COURSE**  
**IN**  
**B.Sc General Degree Course (w.e.f. 2019-20)**



**BANKURA UNIVERSITY**  
**BANKURA**  
**WEST BENGAL**  
**PIN 722155**

# DSE P2a - Insect Vectors and Diseases Lab

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Bankura University

B.Sc General Degree Course (Programme)

CBCS w.e.f. 2019-20

## 4.4 DSE P2a - Insect Vectors and Diseases

**Insect Vectors and Diseases Lab**

**2 Credits**

1

### Practical

5

1. Mounting of different kinds of mouth parts of insects
2. Identification of following insect vectors through permanent slides/ photographs: *Aedes, Culex, Anopheles, Pediculus, Xenopsylla, Cimex, Phlebotomus, Musca*
3. Study of different diseases transmitted by above insect vectors
4. Submission of a project report on any one of the insect vectors and disease transmitted
5. Submission of laboratory note book

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### Distribution of marks

**Full Marks: 15**

- |  |              |
|--|--------------|
| 1. Mounting (any one from Item no. 1)  | = 03         |
| 2. Identification of vector and disease transmission (any 4 from Item No. 2) | (4 × 2) = 08 |
| 4. Submission of Project Report  | = 2          |
| 5. Submission of Laboratory Note Book  | = 2          |

### Note

- Q 1. 1½ mark for mounting and 1½ mark for drawing and labelling  
Q 2. ½ mark for identification and 1½ mark about disease transmitted

### Suggested Readings:

1. Chatterjee and Chatterjee: Practical Zoology
2. Ghosh, K.C. and Manna, B. (2015): Practical Zoology, New Central Book Agency, Kolkata
3. Sinha, J.K. , Chatterjee, A.K. and P. Chattopadhyay Advanced Practical Zoology

## DSEP P 2 b: Aquatic biology Lab

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Bankura University

B.Sc General Degree Course (Programme)

CBCS w.e.f. 2019-20

### 4.6 DSE P2b - Aquatic Biology

**Aquatic Biology Lab**

**2 Credits**

#### Practicals

5

1. Identify the important zooplanktons present in a lake ecosystem.
2. Determine the pH, turbidity/transparency, dissolved Oxygen, and free Carbon dioxide, alkalinity (carbonates & bicarbonates) in water collected from a nearby lake / water body.
3. Instruments used in limnology (Secchi disc, Van Dorn Bottle, Conductivity meter, Turbidity meter, PONAR grab sampler) and their significance.
4. A Project Report on a visit to a Sewage treatment plant/Marine bio- reserve/Fisheries Institute/ Pond Ecosystem
5. Submission of Laboratory Note Book

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#### Distribution of marks

**Full marks: 15**

- |  |           |
|--|-----------|
| 1. Identification with reasons (any three) [From Item 1 and 3] | [2×3] = 6 |
| 2. One experiment (pH/ free CO <sub>2</sub> ) (Item 2)         | [2+3] = 5 |
| 3. Project Report (From Item 4):                               | 2         |
| 4. Submission of laboratory note book:                         | 2         |

#### Note

- Q 1. ½ mark for identification and 1½ marks for characters  
Q 2. For Principle 2 marks and for result 3 marks

#### Suggested Readings:

1. Chatterjee and Chatterjee: Practical Zoology
2. Ghosh, K.C. and Manna, B. (2015): Practical Zoology, New Central Book Agency, Kolkata
3. Sinha, J.K. , Chatterjee, A.K. and P. Chattopadhyay Advanced Practical Zoology



Bankura University

B.Sc. Zoology

NEP w.e.f. 2023-24

# **Syllabus for Four Years Undergraduate Courses in Zoology**

**[New Curriculum and Credit Framework for undergraduate Programme]**

**Following NEP 2020**

**With effect from the Academic Session 2023-24**



**BANKURA UNIVERSITY**

**BANKURA**

**WEST BENGAL**

**PIN 722155**

# MJC3: Ecology Practical



Bankura University

B.Sc. Zoology

NEP w.e.f. 2023-24

## MJC -3: Ecology (Practical)

1 Credit

### Course outcomes:

1. The laboratory aspect of the course is designed in such a way to develop idea on planktonic characters which are important constituents of aquatic food chain.
2. Beside there is the provision for study for community by enumeration of kinds and number of species present in a designated area.
3. Dissolved O<sub>2</sub> and CO<sub>2</sub> content of water are also the topics to have the concept of polluted water.
4. Field visit to National Park/Biodiversity Park/Wild life sanctuary is included due to the fact that the students may be exposed to reality of the idea behind such measures and may also be competent enough to prepare report of their visit.

### Practical

1. Determination of population density in a natural/hypothetical community by quadrat method and calculation of Shannon-Weiner diversity index for the same community
2. Field base experiment for data collection/Insect pitfall trapping/ Light trapping/ Quadrat sampling/ Soil invertebrates sampling/ Bird feeder experiment (any two)
3. Study of an aquatic ecosystem: Zooplankton, Measurement of turbidity/penetration of light, determination of pH, and Dissolved Oxygen content (modified Winkler's method), Chemical Oxygen Demand and free CO<sub>2</sub>
4. Report on a visit to National Park/Zoological Park/Wild life sanctuary /Marine biodiversity
5. Submission of Laboratory Note Book

### Distribution of Marks:

Full marks: 15

- |   |          |
|---|----------|
| 1. Experiment (from Item no. 1):  | 4        |
| 2. Experiment (from Item no. 3; pH or free O <sub>2</sub> or free CO <sub>2</sub> estimation) | 5 (2+3)* |
| 3. Report on Excursion:   | 2        |
| 4. Submission of Laboratory note book:  | 2        |
| 5. Viva   | 2        |

Q2. Principle: 2 marks and result: 3 marks

### Suggested Reading

Desharnais Robert, Jeffrey Bell (2001) 'Ecology Student Lab Manual, Biology Labs', Benjamin Cummings  
Darrell S Vodopich, (2009), 'Ecology Lab Manual', McGraw-Hill Higher Education  
Sinha, J.K. , Chatterjee, A.K. and P. Chattopadhyay (2015) Advanced Practical Zoology, Books & Allied (P) Ltd

# MJC 7: Developmental Biology Practical



Bankura University

B.Sc. Zoology

NEP w.e.f. 2023-24

## MJC-7 : Developmental Biology (Practical)

1 Credit

### Course outcomes:

The practical course will enable students to identify developmental stages of chick, developmental stages and life cycle of *Drosophila* from stock culture, different sections of placenta and to prepare a project report on *Drosophila* culture/chick embryo development.

### Practicals

1. Identification of whole mounts of developmental stages of chick through permanent slides: 24, 48 and 72 hours of incubation.
2. Identification of the developmental stages and life cycle of *Drosophila* from stock culture
3. Identification of different sections of placenta (epitheliochorial, endotheliochorial and hemochorial) (photomicrograph/ slides)
4. Project report on *Drosophila* culture /chick embryo development
5. Submission of Laboratory Note Book

### Distribution of Marks

#### Examination Pattern

Full marks: 15

- |   |            |
|---|------------|
| 1. Identification with reasons (any three) (From Item no. 1, 2 & 3) | 9 (3x 3) * |
| 2. Project Report (From Item no. 4):                                | 2          |
| 3. Laboratory note book:  | 2          |
| 4. Viva with special emphasis on Project report                     | 2          |

### \*Note:

- Q1. Identification: 1 mark and reasons: 2 marks

# MJC 8: Evolutionary Biology Practical



Bankura University

B.Sc. Zoology

NEP w.e.f. 2023-24

## MJC-8: Evolutionary Biology (Practical)

1 Credit

### Course outcomes:

The practical course will enable students to identify major group of fossil, to study of homology and analogy from suitable specimens and verification of Hardy-Weinberg Law by chi square analysis e.t.c

### Practicals

1. Identification of major group of fossils from models/ pictures (Petrified fossil, molds, casts, carbon film, trace fossil)
2. Study of homology and analogy from suitable specimens
3. Study and verification of Hardy-Weinberg Law by chi square analysis
4. Graphical representation and interpretation of data of height/ weight of a sample of 50 humans in relation to their age and sex.
5. Submission of Laboratory Note Book

### Distribution of Marks

#### Examination Pattern

1. Identification with reasons (any two) (From Item no. 1 & 2)
2. One Problem (From Item no. 3):
3. Project report (From Item no.4)
4. Submission of laboratory note book:
5. Viva

#### Full marks: 15

- 4 (2× 2)\*  
5  
2  
2  
2

#### \*Note:

Q1. Identification: 1 mark and reasons: 1 marks

#### Suggested readings:

Ghosh, K.C. and Manna, B. (2015): Practical Zoology, New Central Book Agency, Kolkata  
Poddar T. K., S. Mukherjee & S. K. Das (2002) An Advanced Laboratory Manual of Zoology, Laxmi Publications  
Sinha, J.K., Chatterjee, A.K. and P. Chattopadhyay (2015) Advanced Practical Zoology

**SOCIAL WORK-  
EXTRACT FROM  
BANKURA UNIVERSITY  
SYLLABUS**

**BSW SEMESTER – V**

**UG/SW/504 DSE-2**

**Project Work- Part I**

**Full Marks: 50 Credits: 6**

**OBJECTIVES:**

- Give basic understanding of preparing a project.
- Help students to learn how to write project proposal.
- Introduce to various aspects of project

**Course Outcome:**

This course will help the students acquire necessary skill of preparing a project. A combination of various kinds of skills and expertise attained through this course will prepare the students for opportunities to engage in research institutions and non-government organizations

**Course Content:**

- All the student will be given a research theme from the department of respective colleges at the beginning of the semester-7
- The students should prepare a research synopsis/proposal of around 2-3 typed pages in consultation with the respective College supervisor/instructor and submit 2 copies of the same well in advance.
- In the process of preparing the project work, students are required to present their progress through presentation as instructed by their supervisor

## SEMESTER-III

Course Code: A/SW/302/MJC-4

Course Title: Open Community Field Work and Viva-voce

Credit: 4

Full Marks: 50 (Internal Assessment:10 + Viva-voce: 40)

### OBJECTIVES:

- To initiate conducting the methods of working with individuals and groups.
- To develop an understanding of the needs, problems and programmes of different target groups, individuals, and communities.
- To develop an understanding of the role of social workers in different settings.
- To develop skills in report writing and use of supervision both at the agency and faculty level.

### GENERAL GUIDELINES:

- Students will be placed in rural/urban communities under a faculty supervisor for field work twice a week for thirty days in a semester.
- Every student is required to make a minimum of 80 percent fieldwork visits followed by timely submission of field work documentation (Log sheet, reports, IC, GC etc.).
- Continuous assessment will be carried out based on daily fieldwork reports and participation in individual and group conferences.
- Students must maintain attendance, regularity, and punctuality.
- They will be asked to conduct social casework and social group work in the community apart from the tasks assigned by the supervisor.
- They shall write their final term evaluation report as per the suggestions and recommendations of the concerned faculty supervisor.
- Active participation during IC/GC will help the students to develop reflective critical thinking about the application of social work methods in the field setting.
- Students may be assigned any other field-based assignment as deem fit by the concerned department.

### FIELD WORK EVALUATION:

- Internal Assessment: 10 marks
- Report writing and Viva-voce: 40 marks

**SEMESTER-II**

**COURSE CODE**

**A/SW/204/SEC-2**

**Open Community Field Work**

**Full Marks: 50 Credits:3**

General Guidelines

1. Introduction to primary methods of social work
  - i. Case work: processes, principles, tools and techniques
  - ii. Group work: Process, functions, principles
  - iii. Community organization: Understanding the community, demographic profile, socio-economic profile.
  
2. Acquaint with local institutions and address the issues of local community with special focus on:
  - i. Education
  - ii. Health
  - iii. Drinking water and sanitation
  - iv. Transportation and communication
  - v. Economic condition and livelihoods opportunities
  - vi. Local governance
  
3. Activities for skill enhancement:
  - i. Carry out activities on the felt needs of the community.
  - ii. Develop and make use of soft skills
  - iii. Develop and make use of computer skills