

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

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

Number of courses that include
experiential learning through project
work/field work/internship for the
year2023-24

**BOTANY- EXTRACT
FROM BANKURA
UNIVERSITY SYLLABUS**



Unit 7: Salient features of the following families [Evolutionary trends need to be briefly discussed in case of families marked with asterisks] (10 Lectures)

Dicotyledons: Magnoliaceae*, Malvaceae, Brassicaceae, Fabaceae, Euphorbiaceae, Apiaceae, Apocynaceae, Asclepiadaceae, Solanaceae, Scrophulariaceae, Lamiaceae, Verbenaceae, Acanthaceae, Rubiaceae, Cucurbitaceae, Asteraceae*.

Monocotyledons: Alismataceae*, Poaceae, Musaceae, Orchidaceae*.

3.6 Core P6: Plant Systematics

(Practical: Marks 15/Credits 2)

1. Study of vegetative and floral characters of the following families (Description, V.S. flower, Section of ovary, floral diagrams, floral formula/e and identification upto the genus following any published keys.

Families: Malvaceae, Fabaceae, Apocynaceae, Asclepiadaceae, Asteraceae, Solanaceae, Scrophulariaceae, Lamiaceae, Verbenaceae, Acanthaceae, Rubiaceae, Cucurbitaceae, Euphorbiaceae.

2. **Field visits (local and at least one distal)**– Excursion/Field trips are to be organized in botanically rich areas. A field report with photographic document of plants (at least 20) and corresponding field record to be submitted during practical examination.

3. Submission of a properly dried and pressed herbarium specimen of any one wild plant.

Suggested Readings

1. College Botany Vol. III. New Central Book Agency. Calcutta.
2. Sharma, O.P. 2009. Plant Taxonomy. Mc Graw Hill Education Pvt. Ltd., India.
3. Pandey, H.P. 2010. Principles of Plant Systematics: With special reference to Current Trends in Plant Taxonomy, Lambert Academic Publishing.
4. Pandey, A.K., Khasana, S. 2021. Plant Systematics, 1st edition, CRC Press.
5. Simpson, M.G. 2019. Plant Systematics, 3rd edition, Elsevier.
6. Datta, S. C. 1991. Systematic Botany. Wiley Eastern Ltd. New Delhi, Calcutta.
7. Judd, Campbell, Kellogg, Stevens. 2003. Phylogeny & Evolution of Vascular Plants. Sinauer Associates Inc. Publishers Sunderland, Massachusetts, USA.
8. Lawrence, G. H. M. 1981. Taxonomy of Vascular Plants. Mc Milian New York.
9. Naik, V. N. Taxonomy of Angiosperms. Tata Mc. Graw Hill Publishers Co. 1981. New Delhi
10. Plant Groups. (Recent Edition). H. Mukherjee. New Central Book Agency.
11. Plant Systematics. Gurucharan Singh. 2005 (2nd Edition). Oxford & IBH.
12. Plant Systematics. Simpson. 2006. Elsevier. 11. S. K. Mukherjee. 1984.
13. Sachdeva, S. K. 1990. Angiosperms, Morphology, Anatomy, Taxonomy, Evolution. Kalyani Publishers, New Delhi.

3.3. CC-1C P3: Plant Ecology and Taxonomy

(Practical: Credits 2/Marks 15)

Plant Ecology (Marks-6)

1. Study of instruments used to measure microclimatic variables: Soil thermometer, maximum and minimum thermometer, anemometer, psychrometer/hygrometer, rain gauge and lux meter.
2. Determination of pH, and analysis of two soil samples for carbonates, chlorides, nitrates, sulphates, organic matter and base deficiency by rapid field test.
4. Ecological adaptations of some species: *Ipomoea aquatica* stem, Nerium leaf and *Vanda* root.
5. Determination of minimal quadrat size for the study of herbaceous vegetation in the college campus by species area curve method. (Species to be listed).
6. Quantitative analysis of herbaceous vegetation in the college campus for frequency and comparison with Raunkiaer's frequency distribution law.

Taxonomy (Marks-9)

7. Study of vegetative and floral characters of the following families (Description, V.S. flower, section of ovary, floral diagram/s, floral formula/e and systematic position according to Bentham & Hooker's system of classification): Brassicaceae, Asteraceae, Solanaceae, Lamiaceae, Malvaceae, Rubiaceae, Fabaceae, Apocynaceae, Acanthaceae, Verbenaceae.

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Bankura University

B.Sc. Botany (Programme)

CBCS w.e.f. 2022-23

8. Field visit (local) – Excursion/Field trips are to be organized in Botanically rich areas. A field report with photographic document of plants (at least 10) and corresponding field record to be submitted during practical examination.
9. Submission of a properly dried and pressed herbarium specimen of any one wild plant.


DEPARTMENT OF BOTANY
Sona-nukhi College
Sonamukhi, Bankura

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

**Course Structure of New Curriculum and
Credit Framework for Social Work
Undergraduate Programme**



**BANKURA UNIVERSITY
P.O- PURANDARPUR, DIST-
BANKURA, WEST BENGAL
INDIA, PIN- 722155**

SEMESTER-I
COURSE CODE
A/SW/104/SEC-1

Open Community Field Work

Full Marks: 50 Credits:3

General Guideline

1. Understand human relations and develop rapport building skills
2. To know the historical background of the village/community.
3. Prepare village profile, social map, resource map, mobility map, wealth map, occupation map and technology map.
4. Understand village infrastructure/institutions and identify the resource persons
5. Use of essential social work skills in communication, observation and listening, analyzing and interpreting.
6. Report writing and maintenance of log sheets (documentation)
7. Presentation of reports
8. Self-evaluation on learning

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

CREDIT BASED CHOICE SYSTEM (CBCS)

(THREE YEAR SEMESTER SYSTEM)

SYLLABUS OF

BACHELOR OF SOCIAL WORKHONOURS (BSW)



BANKURA UNIVERSITY

BANKURA WEST BENGAL

Semester -III

| Course Code | Course Title | Full Marks | Credit |
|------------------------------|---|---|---------------|
| UG/SW/301 C-5 | Working with Individuals | 50 (ESE 40+ IA 10) | 6 |
| UG/SW/302 C-6 | Working with Groups | 50 (ESE 40+ IA 10) | 6 |
| UG/SW/303 C-7 (Practicum) | Open Community Field Work & Viva- Voce | 100 (Field Work) & 50 (Viva-voce) | 6 |
| UG/SW/304 SEC-1 | Basic Knowledge of Computer and Communication Skills | 50 (ESE 40+ IA 10) | 2 |
| UG/SW/305 GE-3 | Guidance and Counseling | 50 (ESE 40+ IA 10) | 6 |
| Total Marks | | 350 | 26 |

Semester -IV

| Course Code | Course Title | Full Marks | Credit |
|-------------------------------|--|---|---------------|
| UG/SW/401 C-8 | Working With Communities | 50 (ESE 40+ IA 10) | 6 |
| UG/SW/402 C-9 | Understanding Psychology for Social Work Practice | 50 (ESE 40+ IA 10) | 6 |
| UG/SW/403 C-10 (Practicum) | Open Community Field Work & Viva- Voce | 100 (Field Work) & 50 (Viva-voce) | 6 |
| UG/SW/404 SEC-2 | Entrepreneurship and NGO Management | 50 (ESE 40+ IA 10) | 2 |
| UG/SW/405 GE-4 | Understanding Families and Children | 50 (ESE 40+ IA 10) | 6 |
| Total Marks | | 350 | 26 |

CREDIT BASED CHOICE SYSTEM (CBCS)
(THREE YEAR SEMESTER SYSTEM)
SYLLABUS OF
BACHELOR OF SOCIAL WORKHONOURS (BSW)

w.e.f.

SESSION 2019-2020

BANKURA UNIVERSITY
BANKURA WEST BENGAL
PIN 722155

Semester - V

| Course Code | Course Title | Full Marks | Credit |
|----------------------------------|--|---|---------------|
| UG/SW/501 C-11 | Social Welfare Administration | 50 (ESE 40+ IA 10) | 6 |
| UG/SW/502 C-12 (Practicum) | Open Community Field Work & Viva-Voce | 100 (Field Work) & 50 (Viva-voce) | 6 |

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| | | | |
|--------------------|-----------------------------|--------------------|-----------|
| UG/SW/503 DSE-1 | Social Work with Elderly | 50 (ESE 40+ IA 10) | 6 |
| UG/SW/504 DSE-2 | Rural and Urban Development | 50 (ESE 40+ IA 10) | 6 |
| Total Marks | | 300 | 24 |

Semester - VI

| Course Code | Course Title | Full Marks | Credit |
|----------------------------------|--|---|---------------|
| UG/SW/601 C-13 | Social Work Research | 50 (ESE 40+ IA 10) | 6 |
| UG/SW/602 C-14 (Practicum) | Open Community Field Work & Viva-Voce | 100 (Field Work) & 50 (Viva-voce) | 6 |
| UG/SW/603 DSE-3 | Project Work* | 50 (ESE 40+ IA 10) | 6 |
| UG/SW/604 DSE-4 | Human Rights and Social justice | 50 (ESE 40+ IA 10) | 6 |
| Total Marks | | 300 | 24 |

**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 ● Information Security ● Introduction to Data Science | 6 | 10 | 40 | | 50 | 4 | - | 4 |
| | | | | T:25 | L:15 | | | | |
| SH/csc/ 604/DSE-4 | Any one of the following ● Project Work ● Network Programming | 6 | 10 | 40 | | 50 | 4 | - | 4 |
| | | | | T:25 | L:15 | | | | |
| Total in Semester – VI | | 24 | 40 | 160 | 200 | | | | |

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 Pr.=Practical

**VII Project Work/Dissertation**

- This option is to be offered only in 6th 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.

**EDUCATION- EXTRACT
FROM BANKURA
UNIVERSITY SYLLABUS**

CBCS SYLLABUS
FOR
THREE YEARS UNDER-GRADUATE COURSE
IN
EDUCATION (HONOURS)
(w.e.f. 2022)



BANKURA UNIVERSITY
BANKURA
WEST BENGAL
PIN 722155

SEMESTER –IV

| Course Code | Course Title | Credit | Marks | | | No. of Hours | | |
|---------------------|-------------------------|--------|-------|-----|-------|--------------|-----|-----|
| | | | I.A. | ESE | Total | Lec. | Tu. | Pr. |
| AH/EDN/40 1/C-8 | Educational Research | 6 | 10 | 40 | 50 | 5 | 1 | - |
| AH/EDN/40 2/C-9 | Evaluation in Education | 6 | 10 | 40 | 50 | 5 | 1 | - |
| AH/EDN/40 3/C-10 | Statistics in Education | 6 | 10 | 40 | 50 | 5 | 1 | - |

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University

B.A. (Honours) Education

CBCS w.e.f. 2022-23

| | | | | | | | | | |
|-------------------------------|---------------------------------|---|-----------|-----------|------------|------------|-----------|----------|----------|
| AH/EDN/ 404/GE-4 | Any one of the following | | 6 | 10 | 40 | 50 | 5 | 1 | - |
| | A. | History of Indian Education | | | | | | | |
| | B. | Guidance and Counselling | | | | | | | |
| AH/EDN/ 405/SEC-2 | Any one of the following | | 2 | 10 | 40 | 50 | 1 | - | 2 |
| | A. | Psychological Testing | | | | | | | |
| | B. | Field Based Activity/Project work related to Local Art, Environment, History, Culture and Language etc. | | | | | | | |
| Total in Semester – IV | | | 26 | 50 | 200 | 250 | 21 | 4 | 2 |

CBCS SYLLABUS
FOR
THREE YEARS UNDER-GRADUATE COURSE
IN
EDUCATION (PROGRAMME)
(w.e.f. 2022)



BANKURA UNIVERSITY
BANKURA
WEST BENGAL
PIN 722155

SEMESTER – IV

| Course Code | Course Title | Credit | Marks | | | No. of Hours | | |
|-----------------|-----------------------------------|--------|-------|-----|-------|--------------|-----|-----|
| | | | I.A. | ESE | Total | Lec. | Tu. | Pr. |
| AP/EDN/401/C-1D | Development of Education in India | 6 | 10 | 40 | 50 | 5 | 1 | - |

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University

B.A.(Programme) Education

CBCS w.e.f. 2022-23

| | | | | | | | | |
|-------------------------------|--------------|-----------|-----------|------------|------------|-----------|----------|----------|
| 402/ C-2D | Discipline-2 | 6 | 10 | 40 | 50 | 5 | 1 | - |
| ACP/ 403/ C-E-II | English-II | 6 | 10 | 40 | 50 | 5 | 1 | - |
| AP/EDN /404/ SEC-2 | Project Work | 2 | 10 | 40 | 50 | 1 | - | 2 |
| Total in Semester – IV | | 20 | 40 | 160 | 200 | 16 | 3 | 2 |

**GEOGRAPHY- EXTRACT
FROM BANKURA
UNIVERSITY SYLLABUS**

Syllabus Geography (Honours)

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— CBCS Syllabus for 3-Year Undergraduate —
Honours Course in GEOGRAPHY



BANKURA UNIVERSITY

Bankura, West Bengal, 722155

3.14 SHGEO/602/C-14P: Research Methodology and Field Work

Research Methodology and Field Work

6 Credits

Unit 1: Research Methodology

- 3.14.1 Research in Geography: Meaning, types and significance
- 3.14.2 Literature Review and formulation of research design
- 3.14.3 Defining research problem, objectives and hypothesis. Research materials and methods
- 3.14.4 Techniques of writing scientific reports: Preparing notes, references, bibliography, abstract and keywords

Unit 2: Field Work

1. Fieldwork in Geographical studies –Selection of study area and objectives. Pre-field preparations
2. Field Enquiry Techniques and Tools: Observation (participant, non-participant), questionnaires (open, closed, structured, non-structured). Interview with special reference to focused group discussions.
3. Field Techniques and Tools: Landscape survey using transects and quadrants, constructing a sketch, photo and video recording.
4. Preparation of inventory from field data. Post-field tasks.

Reference Books

- ▶ Creswell J., 1994: Research Design: Qualitative and Quantitative Approaches Sage Publications.
- ▶ Dikshit, R. D. 2003: The Art and Science of Geography: Integrated Readings. Prentice-Hall of India, New Delhi.
- ▶ Evans M., 1988: "Participant Observation: The Researcher as Research Tool" in Qualitative Methods in Human Geography, eds. J. Eyles and D. Smith, Polity.
- ▶ Mukherjee, Neela 2002. Participatory Learning and Action: with 100 Field Methods. Concept Pubs. Co., New Delhi

Syllabus Geography (Honours)

2
0
2
2

— CBCS Syllabus for 3-Year Undergraduate —
Honours Course in GEOGRAPHY



BANKURA UNIVERSITY

Bankura, West Bengal, 722155

3.10 SHGEO/403/C-10P: Analytical Techniques in Environmental Geography

Environmental Geography

6 Credits

| | | |
|--------------------------|--|------------------|
| Total Marks: | 50 (IA-10 Marks + ESE-40 Marks) | |
| Question Pattern: | Question-1 | (1x10=10) |
| | Question-2 | (1x10=10) |
| | Question-3 | (1x10=10) |
| | Lab Note Book & Viva-Voce | (5+5=10) |

Instruction for Laboratory Note Book

- Practical works are to be completed in the classroom.
- Works are to be done in pen/pencil and neatly hand written and signed by class teachers.
- Laboratory Note Books have to be submitted in the examination.

Unit-1: Environmental Impact Assessment

- 1.1 Basic concepts, EIS
- 1.2 EIA Methods: Adhoc, Matrix- simple and weighted
- 1.3 EIA Methods: Checklist and Leopold Matrix
- 1.4 Preparation of Questionnaire for Perception Survey on environmental problems

Unit-2: Measurement of Environmental Parameters

- 2.1 Quality Assessment of Soil: pH and Organic Carbon
- 2.2 Quality Assessment of Water: pH by pH Meter, Turbidity by Turbidity Meter
- 2.3 Quality Assessment of Air: calculation of API/AQI based on CPCB/WBPCB data; Measurement of Atmospheric Pressure by Fortin's Barometer
- 2.4 Identification and listing of different types of water and soil pollutants in the locality

Unit-3: Environmental Project Report

Each student will prepare an individual report based on a specific environmental issue in the neighbourhood (rural/urban) and may collect the following environmental data:

1. Quality of soil-pH and Organic Carbon
2. Quality of water- pH and Turbidity, presence of any contaminant
3. Collection of PM_{2.5} data by Digital Pollution Meter (optional)
4. Solid waste disposal and management
5. Vehicular pollution, if any
6. Industrial/agricultural pollution, if any
7. Any other

The report should be hand written in A4 size paper and must not exceed 2000 words and must be placed before the external examiner in the examination along with the other lab copy.

**HISTORY- EXTRACT
FROM BANKURA
UNIVERSITY SYLLABUS**



BANKURA UNIVERSITY

B.A. in HISTORY (Hons.)

CBCS w.e.f 2022

CBCS SYLLABUS

for

B.A (HONOURS) IN HISTORY

(w.e.f. 2022)



BANKURA UNIVERSITY

BANKURA

WEST BENGAL

722155

Skill Enhancement Course (SEC) (2)
Semester III
UG/HIST/305 SEC- 1: Archives and Museum

Objectives:

The course will teach students about the process of accumulation of historical records over the course of an individual or organisation's lifetime and the importance of displaying artistic and cultural resources of a country.

Outcome:

It will help the students to comprehend the study and practice of organizing, preserving and utilizing the objects preserved in archives and museums in a methodical manner.

Evaluation:

Internal Assessment- 10 marks.

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

10 marks x 2=20 (within 500 words)

Module I. Types of archives and museum: definitions and basic concepts, differences & similarities between Museums and Archives

Module II. Understanding the traditions of preservation in India, Methods of preservation: curatorial care, preventive conservation, chemical preservation and restoration.

Module III. Collection policies, ethics and procedures: field exploration, excavation, purchase, gift and bequests, loans and deposits, exchanges, treasure trove, confiscation and others

Module IV. Documentation: accessioning, indexing, cataloguing, digital documentation and de-accessioning.

Module V. A Brief Study of Museums: The International Council of Museums, (ICOM).

International – Louvre Museum, Paris. British Museum, London, Museum of Natural History, New York; National – Indian Museum, Kolkata, Salar Jung Museum, Hyderabad;

Local – Hazarduari Museum, Murshidabad, Acharya Jogesh Chandra Purakriti Bhaban, Bishnupur

Module VI. A Brief Study of Archives: The International Council on Archives (ICA), The National Archives of India, New Delhi, West Bengal State Archives, Kolkata

Module VII. Museums, Archives and Society: Education and Communication, Outreach Activities; Presentation and Exhibition.

CBCS SYLLABUS
for
B.A IN HISTORY (PROGRAMME)
(w.e.f. 2017)



BANKURA UNIVERSITY
BANKURA
WEST BENGAL
PIN 722155

1. Skill Enhancement Course IV- An Introduction to Archaeology:

Module-I: Definition & Components

Module-II: Historiographical Trends

Module-III: Research Methodologies

Module-IV: Definition of Historical Sites & Explorations

Module-V: Field Work & Tools of research

Module-VI: Documentation, Codification, Classification, Analysis of findings and publications

Suggested Readings:

John.A. Bintliff, A Companion to Archaeology

D.R. Chakrabarti, A History of Indian Archaeology: From the Beginning to 1947, New Delhi, Manohar, 1988

M. Hall & W.S.W. Silliman, Historical Archaeology, USA, Blackwell, 2006

Mathew Johnson, Archaeological Theory: An Introduction, Blackwell Publishing, New Edition, 2010 Published Works by ASI

**ZOOLOGY- EXTRACT
FROM BANKURA
UNIVERSITY SYLLABUS**

Number of courses of ZOOLOGY that include experiential learning through project work/fieldwork during 2023-24

| Sl. No. | Semester/ Part | Course Code | Course Title |
|---------|----------------|------------------------|--|
| | | HONOURS | |
| 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 |
| | | GE | |
| 6 | SEM IV | UG/ZOO/ 404/GE-4 | GEP: Insect Vectors and Diseases Lab |
| | | PROGRAMME | |
| 7 | SEM V | UGP/S.C./501/ DSE-1A | Insect Vectors and Diseases Lab |
| 8 | SEM VI | UGP/S.C. / 601/DSE- 1B | DSEP P 2b Aquatic biology Lab |



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

Distribution of marks

Full marks: 15

| | |
|--|---|
| 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



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.

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

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

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 *Petromyzon*, *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: 15 |
|--|----------------|
| 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. ½ mark for identification and 1½ 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

Podder 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

GE-4 P: Insect Vectors and Diseases Lab



Bankura University

B.Sc. Zoology (Honours)

CBCS w.e.f. 2018-19

6.8 GE P4 - Insect Vectors and Diseases Lab

Insect Vectors and Diseases Lab

2 Credits

List of Practical

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

Distribution of marks

| | Full marks: 15 |
|--|----------------|
| 1. Identification with reasons (any three) [From Item 1] | 9 [3×3]* |
| 2. Mounting of mouth parts (From Item 2) | 2 |
| 3. Project Report (From Item 4): | 2 |
| 4. Laboratory note book: | 2 |

*Note

Q 1. ½ mark for identification, 1½ marks for characters and 1 mark for name of the disease transmitted



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FOR
THREE YEARS UNDER-GRADUATE COURSE
IN
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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

-

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

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 ₂) (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