



MAULANA AZAD COLLEGE

GOVERNMENT OF WEST BENGAL

Affiliated to the University of Calcutta

NAAC Accredited with 'A' Grade

DBT Star College with Star Status

INTERNAL QUALITY ASSURANCE CELL (IQAC)

8, RAFI AHMED KIDWAI ROAD

KOLKATA – 700013

WEST BENGAL, INDIA

WEBSITE: *maulanaazadcollegekolkata.ac.in*

1.3.1

Institution integrates crosscutting issues relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability into the Curriculum:
2021-22

Below are excerpts from the syllabi of various programs offered under the University of Calcutta, highlighting the inclusion of the above-mentioned topics:

❖ Department of English:

UG CBCS syllabus:

<https://www.caluniv.ac.in/cbcs-ug/ug-files/UG-English.pdf>

Courses on Gender Issues and Human Values included in honours and generic elective papers - CC11, GE3 (Women's Writing) & DSE-A3

CC11 (SEMESTER 5, CODE – ENG-A-CC-5-11-TH/TU)
WOMEN'S WRITINGS: 6 CREDITS
(5 CREDITS THEORY AND 1 CREDIT TUTORIAL)

Poetry

Emily Dickinson, 'I cannot live with you'
Elizabeth Barrett Browning, 'How do I love thee'
Eunice De Souza, 'Advice to Women'

Fiction

Alice Walker, Color Purple OR Emily Bronte, Wuthering Heights
Mahasweta Devi, 'Draupadi', translated Gayatri Chakravorty Spivak
Katherine Mansfield, 'Bliss'

Non-Fiction

Mary Wollstonecraft, A Vindication of the Rights of Woman, Chapters I & II (New York: Norton, 1988)
Rassundari Devi, Amar Jiban, translated Enakshi Chatterjee, Writers' Workshop.

End Semester Question Pattern:

Objective – 5 marks
One question of 15 marks from poetry (out of two)
Two questions of 15 marks each from fiction (out of three, one from each)
One question of 15 marks from non-fiction (out of two, one from each)

CC3/GE3 (SEMESTER 3, CODE – ENG-G-CC-3-3-TH/TU) - 6 CREDITS
(5 CREDITS THEORY AND 1 CREDIT TUTORIAL)
WOMEN'S WRITING AND WOMEN'S EMPOWERMENT

Poetry

Elizabeth Barret Browning: 'How Do I Love Thee'
Christina Rossetti: 'Uphill'
Emily Dickinson: 'I cannot live with you'
Sarojini Naidu: 'Palanquin Bearers'

Prose

Rassundari Devi: Amar Jiban, translated Enakshi Chatterjee, Writers' Workshop.
Rokeya Sakhawat Hussain: Sultana's Dream

End Semester Question Pattern:

Objective – 5 marks
Two questions of 15 marks out of three from poetry
Two questions of 15 marks (one from each) out of four from prose (two from each)

DSE-A3 (SEMESTER 6, CODE – ENG-A-DSE-A-6-3-TH/TU)
PARTITION LITERATURE: 6 CREDITS
(5 CREDITS THEORY AND 1 CREDIT TUTORIAL)

Novel

Amitav Ghosh, *The Shadow Lines*

Short Stories

Protiva Basu, 'The Marooned', translated Subhasree Tagore, in *The Other Voice*, eds. Tapati Gupta and Anil Acharya, Kolkata: Anustup

Manik Bandyopadhyay, 'The Final Solution', translated Rani Ray, in Debjani Sengupta ed.

Mapmaking: Partition Stories from Two Bengals, New Delhi: Srishti

Sadat Hasan Manto, 'Toba Tek Singh', in *Black Margins: Manto*, New Delhi: Manohar

Poetry

Sahir Ludhianvi, 'Twentysixth January',

Birendra Chattopadhyay, 'After Death: Twenty Years'

Sankha Ghosh, 'Rehabilitation', in Rakhshanda Jalil, Tarun Saint and Debjani Sengupta eds.

Looking Back: The 1947 Partition of India 70 Years On, New Delhi: Orient Blackswan, 2017

End Semester Question Pattern:

Objective – 5 marks

One question of 15 marks from novel (out of two)

Two questions of 15 marks each from short stories (out of three, one from each)

One question of 15 marks from poetry (out of two)

❖ Department of Philosophy:

UG CBCS syllabus:

<https://www.caluniv.ac.in/cbcs-ug/ug-files/UG-Philosophy.pdf>

Core Course

PHI-A-CC-6-Social and Political Philosophy (6 Credits per week)

- a) Nature and Scope of i) Social Philosophy ii) Political Philosophy iii) Relation between Social and Political Philosophy.
- b) Primary concepts: Society, community, association, institution, family: nature, different forms of family, role of family in the society.
- c) Social Class and Caste: Principles of class and caste, Marxist conception of class, Varṇāśrama dharma.
- d) Theories regarding the relation between individual and society:
 - i) Individualistic theory ii) Organic theory iii) Idealistic theory
- e) Secularism—its nature, Secularism in India.
- f) Social Change: Nature, Relation to social progress, Marx-Engles on social change, Gandhi on social change.
- g) Political Ideals: Nature of Democracy and its different forms, Direct and Indirect democracy, Liberal democracy, Democracy as a political ideal, Socialism: Utopian and Scientific, Anarchism.

Core Course
PHI-A-CC-7-Philosophy of Religion (6 Credits per week)

- a) Nature and scope of Philosophy of Religion. Doctrine of karma and rebirth, doctrine of liberation, (Hindu, Bauddha and Jaina views).
- b) The Philosophical teachings of the Holy Quran: God the ultimate Reality, His attributes, His relation to the world and man.
- c) Some basic tenets of Christianity: The doctrine of Trinity, The theory of Redemption.
- d) Religious Pluralism, Inter-religious dialogue and Possibility of Universal Religion.
- e) Arguments for the existence of God: Cosmological, Teleological and Ontological arguments, Nyāya arguments.
- f) Grounds for Disbelief in God: Sociological theory (Durkheim), Freudian theory, Cārvāka, Bauddha and Jaina views.
- g) The Peculiarity of Religious Language: The doctrine of analogy, Religious statements as Symbolic, Religious language as Non-Cognitive (Randal's view), the language game theory (D.Z. Phillip).

Core Course
PHI-A-CC-12-Ethics (Indian) (6 Credits per week)

- a) Introduction: Concerns and Presuppositions, Concept of Sthitaprañjna, Karmayoga: (Gīta) Puruṣārthas and their inter-relations.
- b) Meaning of Dharma, Concept of Ṛṇa and Ṛta. Classification of Dharma: sādhāraṇadharmā and Asādhāraṇa dharmā, Varnāśrama dharmā.
- c) Vidhi and Niṣedha.
- d) Buddhist Ethics: Pañcaśīla, Brahmavihārabhāvanā (Bauddha) Anuvrata, Mahāvratā, Ahimsā.
- e) Jaina Ethics: anubratā, mahabratā.
- f) Mimamsa Ethics: nitya naimittika karma and kāmya karma, the imperative in kāmya karmas and in kāmya karmas involving himsā.

Core Course
PHI-A-CC-14-Ethics (Western) (6 Credits per week)

- A. Nature and Scope of Ethics, Classification of Ethics: a) Prescriptive, b) Meta Ethics, c) Applied Ethics.
- B. Moral and Non-moral actions, Object of Moral Judgement—Motive and Intention
- C. Moral Theories: Plato and Aristotle
- D. Standards of Morality: Hedonism—Ethical, Psychological.
Utilitarianism: Act-utilitarianism, Rule-utilitarianism. Deontological
Theories: Act-Deontological Theories, Rule-Deontological Theories— Kant's Theory
- E. Theories of Punishment

Semester 3 - PHI-A-SEC- A
(b) Man and Environment (2 Credits per week)

- a) Classical Indian Attitude to Environment
 - i) The Upanisadic world-view, ii) Tagore's understanding of nature, iii) The post-Upanisadic view of nature
- b) Respect for Nature
 - i) The attitude of respect, ii) Bio-centric outlook to nature, iii) Ethical standards and rules that follow from the attitude of respect to nature, iv) The idea of inherent worth of nature.

- c) Intrinsic Value of nature
 - i) Moore's talk of 'intrinsic properties', ii) Chilsom's idea of intrinsic value, iii) Attfield on the intrinsic value of nature, iv) Callicott's idea of intrinsic value of nature, v) Rolston III on intrinsic value of nature, vi) intrinsic value and objective value
- d) Deep Ecology and its Third World Critique
 - i) Arne Naess on Deep Ecology, ii) Ramchandra Guha's critique of Deep Ecology
- e) Eco-feminism
 - i) Understanding nature and the feminine, ii) Dualisms in Western tradition, iii) Masculinity, humanity and nature.

Semester 4

PHI-A-SEC- B (any one from the following options)

- (a) Emerging trends of thought (2 Credits per week) (any two from the following)

- A. Business Ethics
- B. Environmental Philosophy
- C. Feminist Philosophy
- D. Peace Studies
- E. Recent trends in ethics

A. Business Ethics

1. Why Study Business Ethics?
 - i) Ethical Issues in business
 - ii) Ethical principles in business
2. Environment and Business Ethics
 - i) Business ethics and environmental values
 - ii) Ethics of conserving depletable resources
3. Ethics in Management
 - i) Management by Value Programmes: a qualitative appraisal
 - ii) Ethical vision of Management: A Vedantic outline

B. Environmental Philosophy

- a. The meaning of the word 'nature'. Narrow and broad sense of nature. Attitudes ought to be towards nature.
- b. Attitude of respect. Ethical standards and rules that follow from the attitude of respect to nature.
- c. G. E. Moore's theory of intrinsic value. Place of intrinsic value in Environmental Ethics. Epistemology and Environmental value. Values and disvalues in nature. Ethics of respect for nature.
- d. Meaning of Shallow and Deep Ecology movements. Principles of diversity and of symbiosis. Fight against pollution and resource depletion. Local autonomy and decentralisation.
- e. Assimilation of domination of Nature to domination of women. The rationale underlying this assimilation. The basic tenets and methodology of ecofeminism. Social ecology, deep ecology and ecofeminism: overlap and conflicts

C. Feminist Philosophy

- a. The sex/gender dichotomy.
- b. Three forms of gender discrimination: sexism, patriarchy and Androcentrism or Phallogentrism
- c. Androcentrism in philosophy: feminist approach. (Objective versus subjective, context neutral versus context dependent, universal versus particular, reason versus emotion)
 - i) The distinction between liberal and radical feminist approach.
 - ii) A brief overview of feminist approach to different branches of philosophy: metaphysics, epistemology and ethics.

Semester 4
PHI-A-SEC- B (any one from the following options)

(b) Philosophy of Human Rights (2 Credits per week)

1. A Definition and Nature of Human Rights
2. The Idea of Human Rights: Its Origins and Historical Developments during Ancient period, Modern period and Contemporary period
3. The Idea of Natural Law and Natural Rights: Thomas Hobbes and John Locke.
4. The Natural Rights Tradition: Some Reactions from Jeremy Bentham, Edmund Burke and Thomas Paine
5. Natural Right, Fundamental Right and Human Right
6. Preamble, Fundamental Rights and Duties (Indian Constitution)
7. Contemporary Perspectives: Joel Feinberg—Basic Rights

❖ Department of Political Science:

UG CBCS syllabus:

<https://www.caluniv.ac.in/cbcs-ug/ug-files/UG-PolSc.pdf>

Discipline-Specific Electives
Gender and Politics [PLS-A-DSE-5-A(1)-TH+TU]

Module I:

I. Groundings:

1. Patriarchy: (a) Sex-Gender Debates, (b) Public-Private Divisions, (c) Power.
2. Feminism.
3. Family, Community, State

Module II:

II. Movements & Issues:

1. History of the Women's Movement in India.
2. Violence against Women.
3. Work & Labour: (a) Visible & Invisible Work, (b) Reproductive & Care Work, (c) Sex Work.

Discipline-Specific Electives
Human Rights in a Comparative Perspective [PLS-A-DSE-6-B(4)-TH+TU]

Module I

Human Rights: Theory and Institutionalization

Understanding Human Rights: Three Generations of Rights

Institutionalization: Universal Declaration of Human Rights

Rights in National Constitutions: South Africa and India

Issues: Torture: USA and India; Surveillance and Censorship: China and India;

Terrorism and Insecurity of Minorities: USA and India

Module II

Structural Violence:

Caste and Race: South Africa and India

Gender and Violence: India and Pakistan

Adivasis/Aboriginals and the Land Question: Australia and India

Skill Enhancement Courses
Democratic Awareness through Legal Literacy: PLS-A-SEC-3-A(1)-TH

Module I

1. Laws relating to Criminal jurisdiction-provisions relating to filing an FIR, arrest, bail, search and seizure and some understanding of the questions of evidence and procedure in the Criminal Procedure Code.
2. Offences under IPC.
3. India: Personal laws. Customary Laws
4. Laws relating to Dowry, sexual harassment and violence against women.

Module II

5. Laws relating to consumer rights.
6. Right to Information.
7. Laws relating to Cybercrimes.
8. Anti-terrorist laws: Implications for security and human rights.

❖ Department of Economics:

UG CBCS syllabus:

<https://www.caluniv.ac.in/cbcs-ug/ug-files/UG-Economics.pdf>

Discipline Specific Elective- B(2) : ECO-A-DSE-6-B(2)-TH-TU

Environmental Economics [EE]

Total Marks: 100 [Theory(Th) 65 + Tutorial(Tu) 15 + Internal Assessment 10+Attendance: 10]

Total Credits: [5(Th)+1(Tu)]=6 , No. of Lecture hours: 75, No. of Tutorial contact hours: 15

Unit 1. Introduction

- 1.1 What is environmental economics;
- 1.2 Review of microeconomics and welfare economics.
- 1.3 Interlinkages between the economy and environment

Unit 2. Efficiency and Market Failure 18 lecture hours

- 2.1 Pareto optimality and market failure in the presence of externalities
- 2.2 Property rights and the Coase theorem
- 2.3 Public goods/ bads and market failure

Unit 3. The Design and Implementation of Environmental Policy 20 lecture hours

- 3.1 Pigouvian Fees – Single Polluter, Multiple Polluters, Fees vs Subsidies
- 3.2 Regulating Pollution : Command and Control, Economic Incentives
- 3.3 The Basic Theory of Tradeable Pollution Permits

Unit 4. International Environmental Problems 13 lecture hours

- 4.1 Transboundary Pollution – Transboundary Pollution as a problem of international externalities
- 4.2 International Trade and Environment – Pollution Havens
- 4.3 International Environmental Agreements – Basic idea about Montreal and Kyoto Protocol and Talks on Climate Change

Unit 5. Measuring the values of Environmental Costs and Benefits 17 lecture hours

- 5.1 Concepts of Willingness to pay (WTP) and Willingness to accept compensation (WTAC), Difference between the two concepts
- 5.2 Direct and Indirect Methods of Valuation – Contingent valuation, Travel Cost, hedonic Pricing – basic concepts only (no econometric techniques) – when they should be used, what are the advantages and disadvantages of these methods.

Discipline Specific Elective –B(2): ECO-A-DSE-6-B(2)-TH-TU

Issues in Development Economics [IDE]

Total Marks: 100 [Theory(Th) 65 + Tutorial(Tu) 15 + Internal Assessment 10+Attendance: 10]

Total Credits: [5(Th)+1(Tu)]=6 ,

No. of Lecture hours: 75, No. of Tutorial contact hours: 15

1. Demography and Development 10 lecture hours
 - Demographic concepts; birth and death rates, age structure, fertility and mortality
 - Demographic transitions during the process of development; gender bias in preferences and outcomes and evidence on unequal treatment within households
 - Connections between income, mortality, fertility choices and human capital accumulation
 - Migration.
2. Land, Labor and Credit Markets 20 lecture hours
 - The distribution of land ownership; land reform and its effects on productivity
 - Contractual relationships between tenants and landlords
 - Land acquisition; nutrition and labor productivity
 - Informational problems and credit contracts
 - Microfinance
 - Inter- linkages between rural factor markets.
3. Individuals, Communities and Collective Outcomes 15 lecture hours
 - Individual behaviour in social environments
 - Multiple social equilibria;
 - Governance in organizations and in communities;
 - Individual responses to organizational inefficiency.
4. Environment and Sustainable Development 15 lecture hours
 - Defining sustainability for renewable resources
 - A brief history of environmental change;
 - Common-pool resources;
 - Environmental externalities and state regulation of the environment;
 - Market based instruments, economic activity and climate change.
5. Globalization 15 lecture hours
 - Globalization in historical perspective
 - The economics and politics of multilateral agreements;
 - Trade, production patterns and world inequality
 - Financial instability in a globalized world.
 - India in the context of global economy

❖ Department of Botany:

UG CBCS syllabus:

<https://www.caluniv.ac.in/cbcs-ug/ug-files/UG-Botany.pdf>

SEMESTER IV - CORE COURSE-8
PLANT GEOGRAPHY, ECOLOGY AND EVOLUTION (BOT-A-CC-4-8-TH)
THEORETICAL (Credits 4, Lectures 60)

PLANT GEOGRAPHY

1. Phytogeographical regions:
 - 1.1. Phytogeographical regions of India (Chatterjee 1960); 1.2. Dominant flora of Eastern Himalaya, Western Himalaya and Sunderban.
2. Endemism:
 - 2.1 Endemic types and Factors; 2.2. Age & Area hypothesis and Epibiotic theory; 2.3. Endemism in Indian flora.

ECOLOGY

1. Preliminary idea on:
 - 1.1. Habitat and Niche, 1.2. Ecotone and edge-effect, 1.3. Microclimate, 1.4. Ecads, ecotype and ecoclines, 1.5. Carrying capacity.
2. Community ecology:
 - 2.1. Community- Characteristics and diversity, 2.2. Ecological succession –Primary and secondary, Seral stages (with reference to Hydrosere), autogenic and allogenic succession.
- 3.1. Plant indicators (metallophytes); 3.2. Phytoremediation.
4. Conservation of Biodiversity:
 - 4.1. Level of Biodiversity: genetic, species & ecosystem diversity, 4.2. Biodiversity hot spots- criteria, Indian hotspots, 4.3. In- situ and ex-situ conservation, 4.4. Seed banks, 4.5. Cryopreservation

EVOLUTION

- 1.1 Introduction, 1.2. Theories of evolution: Natural selection, Group selection, Neutral theory of molecular evolution, 1.3. Phyletic gradualism, Punctuated equilibrium and Stasis
- 2.1 Brief idea on: Stabilizing directional, disruptive and sexual selection; Speciation: Sympatric and allopatric speciation; Coevolution, Adaptive radiation, Reproductive isolation
- 3.1. Simplified phylogeny of bacteria, algae, fungi, bryophyte, pteridophyte and gymnosperm, 3.2. Phylogenetic tree.

PRACTICAL- PLANT GEOGRAPHY, ECOLOGY AND EVOLUTION
(BOT-A-CC-4-8-P) (Credits 2)

PLANT GEOGRAPHY

1. Field visit- at least one long excursion at different phytogeographical region of India.
2. Study of local flora and submission of a project report highlighting phytogeographical characteristics of the region.

ECOLOGY

1. Study of community structure by quadrat method and determination of (i) Minimal size of the quadrat, (ii) Frequency, density and abundance of components (to be done during excursion/ field visit).
2. Comparative anatomical studies of leaves from polluted and less polluted areas.
3. Measurement of dissolved O₂ by azide modification of Winkler's method.
4. Comparison of free CO₂ from different sources

❖ Department of Zoology:

UG CBCS syllabus:

<https://www.caluniv.ac.in/cbcs-ug/ug-files/UG-Zoology.pdf>

PART III: SEMESTER 5 : CORE COURSE 11. - ZOOA-CC5-11-TH

Ecology

Full Marks 50 4 Credits 50 Hours

Unit 1: Introduction to Ecology

Autecology and synecology, Levels of organization, Laws of limiting factors, Study of Physical factors, The Biosphere.

Unit 2: Population

Unitary and Modular populations Unique and group attributes of population: Demographic factors, life tables, fecundity tables, survivorship curves, dispersal and dispersion. Geometric, exponential and logistic growth, equation and patterns, r and K strategies Population regulation – density dependent and independent factors, Population Interactions, Gause's Principle with laboratory and field examples, Lotka-Volterra equation for competition.

Unit 3: Community

Community characteristics: species diversity, abundance, dominance, richness, Vertical stratification, Ecotone and edge effect; Ecological succession with one example.

Unit 4: Ecosystem

Types of ecosystem with an example in detail, Food chain: Detritus and grazing food chains, Linear and Y-shaped food chains, Food web, Energy flow, Ecological pyramids and Ecological efficiencies; Nitrogen cycle.

Unit 5: Applied Ecology

Types & level of biodiversity Mega-diversity countries, Biodiversity Hot spot, Flagship species, Keystone species, Wildlife Conservation (in situ and ex situ conservation), concept of protected areas. Red data book, Indian wild life act & Schedule. Concept of corridor, advantages and problem of corridor. Threats to survival and conservation strategies for Tiger, Olive ridley, White Rumped Vulture.

Ecology Lab, ZOOA-CC5-11-P

Full Marks 30 60 Hours 2 Credits

List of 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. Study of an aquatic ecosystem: Phytoplankton and zooplankton, Measurement of area, temperature, salinity, determination of pH, and Dissolved Oxygen content (Winkler's method), Chemical Oxygen Demand and free CO₂
3. Report on a visit to National Park/Biodiversity Park/Wild life sanctuary/ any place of ecological interest/ ecological uniqueness/ Zoological garden

PART III: SEMESTER 6 : CORE COURSE 13: ZOOA-CC6-13-TH

Developmental Biology

Full Marks 50 4 Credits 50 Hours

Unit 1: Early Embryonic Development

Gametogenesis: Spermatogenesis, Oogenesis (sea urchin & mammal); Types of eggs, Egg membranes; Fertilization in sea urchin and mammal; Planes and patterns of cleavage; Types of Blastula [frog and chick]; Fate map in chick embryo, fate mapping using vital dye and radioactive technique; Gastrulation in frog and chick; Embryonic induction and organizers in *Xenopus* (Spemann & Mangold's experiment)

Unit 2: Late Embryonic Development

Extra-embryonic membranes in Chick; Implantation of embryo in humans, Placenta (Structure, types and functions of placenta)

Unit 3: Post Embryonic Development

Development of brain and Eye in Chick. Molecular Induction in Brain and Eye development.

Unit 4: Implications of Developmental Biology

In vitro fertilization (IVF), Stem cell: Concept of potency, types, markers and applications of stem cell therapy in bone marrow transplantation and cartilage regeneration

Developmental Biology Lab; ZOOA-ZooA-CC6-13-P

Full Marks 30 60 Hours 2 Credits

List of Practical

1. Study of whole mounts of developmental stages of chick embryo through permanent slides: 24, 48, and 96 hours of incubation
2. Study of the developmental stages and life cycle of *Drosophila*
3. Study of different sections of placenta (photomicrograph/ slides)
4. Identification of Invertebrate larva through slides/ photographs of Phylum Annelida, Arthropoda, Mollusca and Echinodermata

PART III: SEMESTER 6 : CORE COURSE 14. ZOOA-CC6-14-TH

Evolutionary Biology

Full Marks 50 4 Credits 50 Hours

Unit 1

Origin of Life (Chemical basis), RNA world hypothesis

Unit 2

Historical review of Evolutionary concepts: Lamarckism, Darwinism and Neo Darwinism

Unit 3

Geological time scale, Fossil: types and age determination by Carbon dating, Evolution of horse

Unit 4

Natural Selection: Modes with Examples;

Unit 5

Species concept, Isolating mechanisms, modes of speciation; Speciation by chromosome rearrangement in *Drosophila*. Adaptive radiation/macroevolution (exemplified by Galapagos finches).

Unit 6

Origin and Evolution of Man, Unique Hominid characteristics contrasted with primate characteristic

Unit 7

Population genetics: Hardy-Weinberg Law; factors disrupting H-W equilibrium (Genetic Drift, Migration and Mutation and Selection in changing allele frequencies

(only derivations required). Simple problems related to estimation of allelic and gene frequencies.

Unit 8

Extinction, back ground and mass extinctions, detailed example of K-T extinction

Unit 9

Phylogenetic trees, construction and interpretation of Phylogenetic tree using parsimony, convergent and divergent evolution.

Evolutionary Biology Lab, ZooA-CC6-14-P

Full Marks 30 60 Hours 2 Credits

List of Practical

1. Study of fossils from models/ pictures: Dickinsonia, Paradoxides (Trilobita), Asteroceras (Ammonoid), Pentremites (Blastoid Echinoderm), Ichthyosaur, Archaeopteryx, Cynodont.
2. Study of homology and analogy from suitable specimens.
3. Phylogenetic trees, Construction & interpretation of Phylogenetic tree using parsimony, Construction of dendrogram following principles of phenetics & cladistics from a data table.

PART III: SEMESTER 6 : DSE1. ZOOA-DSE(B)-6-1-TH

Animal Behaviour and Chronobiology

Full Marks 50 4 Credits 50 Hours

Unit 1: Patterns of Behaviour

Stereotyped Behaviours (Orientation, Reflex); Individual Behavioural patterns; Instinct vs. Learned Behaviour; FAP, Associative learning, classical and operant conditioning, Habituation, Imprinting.

Unit 2: Social and Sexual Behaviour

Social organisation in termites; Communication (dance & pheromones in Bees)
Social behaviour: Altruism (Hamilton's rule and concept of haplodiploidy), Cooperation and Selfishness, Sexual Behaviour: Sexual dimorphism, Mate choice in peacock, Intra-sexual selection (male rivalry in red deer), Kinship theory: Relatedness & inclusive fitness; parental care in fishes (Nest Building & coast benefit), conflict within families: parent offspring conflict and sibling rivalry

Unit 3: Chronobiology & Biological Rhythm

Types and characteristics of biological rhythms: Short- and Long- term rhythms; Circadian rhythms; Tidal rhythms and Lunar rhythms, Circannual rhythms; Photic and non-photiczeitgebers; Role of melatonin. Biological clock and its adaptive significance. Circannual rhythm in bird migration.

Animal Behaviour and Chronobiology Lab, ZOOA-DSE(B)-6-1-P

Full Marks 50 60 Hours 2 Credits

List of Practical

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

PART III: SEMESTER 6 DSE2. ZOOA-DSE(B)-6-2-TH

Fish and Fisheries

Full Marks 50 4 Credits 50 Hours

Unit 1: Introduction and Classification

Feeding habit, habitat and manner of reproduction. Classification of fish (upto Subclasses) (Romar, 1959)

Unit 2: Morphology and Physiology

Types of fins and their modifications; Locomotion in fish; Hydrodynamics; Types of Scales, Use of scales in Classification and determination of age of fish; Gills and gas exchange; Swim Bladder: Types and role in Respiration, buoyancy; Electric organ, Bioluminescence

Unit 3: Fisheries

Inland Fisheries; Marine Fisheries; Fishing crafts and Gears; Depletion of fisheries resources; Application of remote sensing and GIS in fisheries; Fisheries law and regulations

Unit 4: Aquaculture

Extensive, semi-intensive and intensive culture of fish; Pen and cage culture; Polyculture; Composite fish culture; Brood stock management; Induced breeding of fish; Management of finfish hatcheries; Preparation and maintenance of fish aquarium; Preparation of compound diets for fish; Role of water quality in aquaculture; Fish diseases: Bacterial, viral and parasitic; Preservation and processing of harvested fish, Fishery by-products

Unit 5: Fish in research

Transgenic fish, Zebra fish as a model organism in research

Fish and Fisheries Lab, ZOOA-DSE(B)-6-2-P

Full Marks 30 60 Hours 2 Credits

List of Practical

1. Morphometric and meristic characters of fishes
2. Identification of *Petromyzon*, *Myxine*, *Pristis*, *Exocoetus*, *Hippocampus*, *Gambusia*, *Labeo*, *Heteropneustes*, *Anabas*
3. Study of different types of scales (through permanent slides/ photographs).
4. Study of crafts and gears used in Fisheries (Photographs)
5. Water quality criteria for Aquaculture: Assessment of pH, alkalinity, Salinity.
6. Study of air breathing organs in *Channa*, *Heteropneustes*, *Anabas* and *Clarias*
7. Project Report on a visit to any fish farm/ pisciculture unit/ Zebrafish rearing Lab.

Skill Enhancement courses (SEC)

[A student will choose either ZOOA-SEC(A)-3-1 or ZOOA-SEC(A)3-2]

PART II: SEMESTER 3

SEC-1 Apiculture

ZOOA-SEC(A)-3-1-TH

Full Marks 80 2 Credits 30 Hours

Unit 1: Biology of Bees

Apis and Non-Apis Bee species and their identification. General Morphology of Apis
Honey Bees, Social Organization of Bee Colony

Unit 2: Rearing of Bees

Artificial Bee rearing (Apiary), Beehives – Newton and Langstroth box
Bee Pasturage, Selection of Bee Species for Apiculture, Modern Bee Keeping
Equipment, Methods of Extraction of Honey (Indigenous and Modern)

Unit 3: Diseases and Enemies

Bee Diseases and Enemies, Control and Preventive measures

Unit 4: Bee Economy

Products of Apiculture Industry and its Uses – Honey, Bees Wax, Propolis, Pollen etc.

Unit 5: Entrepreneurship in Apiculture

Bee Keeping Industry – Recent Efforts, Modern Methods in employing artificial
Beehives for cross pollination in horticultural gardens

PART II: SEMESTER 3

SEC-2. Sericulture

ZOOA-SEC(A)-3-2-TH

Full Marks 80 2 Credits 30 Hours

Unit 1: Introduction

Sericulture: Definition, history and present status; Silk route
Types of silkworms,
Distribution and Races, Exotic and indigenous races
Mulberry and non-mulberry Sericulture

Unit 2: Biology of Silkworm

Life cycle of Bombyx-mori
Structure of silk gland and secretion of silk

Unit 3: Rearing of Silkworms

Selection of mulberry variety and establishment of mulberry garden, Rearing house
and rearing appliances. Disinfectants: Formalin, bleaching powder, RKO
Silkworm rearing technology: Early age and Late age rearing
Types of mountages
Spinning, harvesting and storage of cocoons

Unit 4: Pests and Diseases

Pests of silkworm: Uzi fly, dermestid beetles and vertebrates
Pathogenesis of silkworm diseases: Protozoan, viral, fungal and bacterial
Control and prevention of pests and diseases

Unit 5: Entrepreneurship in Sericulture

Prospectus of Sericulture in India: Sericulture industry in different states,
employment, potential in mulberry and non-mulberry sericulture
Visit to various sericulture centres.

[A student has to choice either ZOOA-SEC(B)-4-1 or ZOOA-SEC(B)4-2]

PART II: SEMESTER 4
SEC-1.Aquarium Fish Keeping
ZOOA-SEC(B)-4-1-TH
Full Marks 80 2 Credits 30 Hours

Unit 1: Introduction to Aquarium Fish Keeping

The potential scope of Aquarium Fish Industry as a Cottage Industry, Exotic and Endemic species of Aquarium Fishes

Unit 2: Biology of Aquarium Fishes

Common characters and sexual dimorphism of Fresh water and Marine Aquarium fishes such as Guppy, Molly, Sword tail, Gold fish, Angel fish, Blue morph, Anemone fish and Butterfly fish

Unit 3: Food and feeding of Aquarium fishes

Use of live fish feed organisms. Preparation and composition of formulated fish feeds, Aquarium fish as larval predator

Unit 4: Fish Transportation

Live fish transport - Fish handling, packing and forwarding techniques.

Unit 5: Maintenance of Aquarium

General Aquarium maintenance – budget for setting up an Aquarium Fish Farm as a Cottage Industry

❖ Department of Sociology:

UG CBCS syllabus:

<https://www.caluniv.ac.in/cbcs-ug/ug-files/UG-Sociology.pdf>

CC-7

Sociology of Gender and Sexuality

1. Gendering Sociology: An overview
2. Gender as a Social Construct
 - 2.1. Gender, Sex and Sexuality, Gender stereotyping and socialization, Gender role and identity
 - 2.2. Gender stratification and inequality, Gender discrimination and patriarchy, Production of Masculinity and Femininity,
3. Gender: Differences and Inequalities
 - 3.1 Class, Caste
 - 3.2 Family, Work
 - 3.3 Third Gender
 - 3.4 Sexual violence
4. Gender, Power and Resistance
 - 4.1 Power and Subordination
 - 4.2 Resistance and Movements (Chipko/ Gulabi Gang)

CC-9
Population Studies

1. Introducing Population Studies
 - 1.1 Definition, Nature and Scope
 - 1.2 Demography and Sociology
 - 1.3 Concepts and Approaches:
 - 1.3.1 Malthusian perspective
 - 1.3.2 Marxist perspective
 - 1.3.3 Demographic Transition theory
2. Population, Social Structure and Processes
 - 2.1 Population Size and Growth
 - 2.2 Fertility, Culture and fertility.
 - 2.3 Mortality, Determinants, Reproduction and Mortality
3. Population, Gender and Migration
 - 3.1 Women, Family, Status and fertility
 - 3.2 Society and New Reproductive Technologies
 - 3.3 Migration, Types and consequences.
4. Population Dynamics and development
 - 4.1 Population as constraint and resources of development.
 - 4.2 Population programmes and policies in India.

Group-A
SEC-A(2)
Gender Sensitization

1. What is Gender?
 - 1.1 Gender as a category
 - 1.2 Gender, Sex and sexuality
 - 1.3 Masculinity and Femininity
 - 1.4 Private and public dichotomy
 - 1.5 Gender stereotypes
2. Gender Construction
 - 2.1 Beyond the gender binary
 - 2.2 Ideas and Discrimination on LGBT
3. Gender Practices and Policies
 - 3.1 Gender Inequality
 - 3.1.1 Female Infanticide and Child Marriage
 - 3.1.2 Pocso Act: Overview and Awareness
 - 3.1.3 Eve teasing, Rape, Domestic violence
 - 3.2 Gender and Workplace Harassment
 - 3.2.1 Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013 (“POSH Act”)
 - 3.2.2 Vishakha judgment and Current situation

Group-B
SEC-B (2)
Theory & Practice of Development

1. What is development?
2. Recent trends in Development and Post development
 - 2.1 Social development indicators

- 2.2 Sustainable development
- 2.3 Growth-Development Debate
- 2.4 Private–Public Partnership-PPP
- 3. Social services & development
 - 3.1 Concept of social service
 - 3.2 Social services for socialization and development
 - 3.3 Participatory development: Gender and Development GAD; Civil society & grassroots initiatives: SHG; NGO
 - 3.4 Corporate Social Responsibility CSR
- 4. Human Development: Growth vs. Development
 - 4.1 Development with dignity
 - 4.2 Decentralisation of development: Panchayat & Municipality
 - 4.3 MGNREGA
 - 4.4 Digital India

Group A
DSE-A-(1)
Urban Sociology

- 1. Introducing Urban Sociology
 - 1.1 Emergence, Development and Importance of Urban Sociology
 - 1.2 Rural-urban continuum: An Overview
 - 1.3 Urban, Urbanism and Urbanity
 - 1.4 Urbanization processes and patterns
- 2. Perspectives in Urban Sociology
 - 2.1. Ecological
 - 2.2. Political Economy
 - 2.3. Network
 - 2.4 City as Culture
- 3. Movements and Settlements with reference to India
 - 3.1. Migration: Meaning, Types, Factors
 - 3.2 Types of Urban Settlements: City and its types
 - 3.3 Trends of Settlement and its Implications: Smart Cities
- 4. Urban Space: Problems with reference to India
 - 4.1 Housing and Slum
 - 4.2 Poverty
 - 4.3 Crime and juvenile delinquency
 - 4.4 Beggary

Group A
DSE- A- (2)
Sociology of Work and Industry

- 1. Interlinking Work and Industry
 - 1.1 Concept of work and occupation
 - 1.2 Work in industrial society
- 2. Forms of Industrial Culture and Organisation
 - 2.1 Industrialism
 - 2.2 Post-industrial Society
 - 2.3 Information Society
- 3. Dimensions of Work
 - 3.1 Alienation: Causes and Consequence
 - 3.2 Gender: Women and Industry, Gender Discrimination in Work

- 3.3 Nature of Unpaid Work and Forced Labour
- 4. Work in the Informal Sector
 - 4.1 Definition, Informal sector in Developing countries
 - 4.2 Women's Work and the Informal sector
- 5. Risk, Hazard and Disaster
 - 5.1 Nature and Types of Industrial Risk, Hazard and Disaster
 - 5.2 Dimensions and Trends of Vulnerability and Exposure

Group A
DSE-A (3)
Environmental Sociology

- 1. Envisioning Environmental Sociology
 - 1.1. Environmental Sociology: Origin, New Directions
 - 1.2. Realist-Constructionist Debate
 - 1.3 Development, Displacement and Rehabilitation: Major Issues
- 2. Approaches
 - 2.1 Human Ecology – New Environmental Paradigm
 - 2.2 Treadmill of Production
 - 2.3 Ecological Modernization
 - 2.4 Ecofeminism
 - 2.5 Political Ecology and Ecological Marxism
 - 2.6 Convergence of Different Approaches: Sustainable Development
- 3. Environmental Movements in India
 - 3.1 Chipko
 - 3.2 Narmada
 - 3.3 Silent Valley Movement
- 4. Global Issues
 - 4.1 Global Environmental Politics: Major Issues
 - 4.2 Climate Change: Major Issues

Group B
DSE- B (1)
Indian Sociological Traditions

- 1. G S Ghurye
 - 1.1 Caste and Race
 - 1.2 City and Civilization
- 2. Radhakamal Mukerjee
 - 2.1 Personality, Society, Values
 - 2.2 Social Ecology
- 3. D P Mukerji
 - 3.1 Tradition and Modernity
 - 3.2 Middle Class
- 4. Verrier Elwin
 - 4.1. Tribes in India
- 5. M.N. Srinivas
 - 5.1. Social Change
- 6. Irawati Karve
 - 6.1. Gender and Kinship
- 7. Leela Dube(
 - 7.1 Caste and Gender

❖ Department of Sanskrit:

UG CBCS syllabus:

<https://www.caluniv.ac.in/cbcs-ug/ug-files/UG-Sanskrit.pdf>

Course Name	Course Code	Papers dealing with
Raghuvamśam Kumārasambhavam Kirātārjunīyam Nītiśatakam	SAN-A-CC-1-TH/TU	Human Values & Ethics
Śīsupālavadhā	SAN-G-CC-A1-TH/TU	Human Values
Nītiśatakam	SAN-G-CC-A1-TH/TU	Human Values & Ethics
Vedic Literature Rāmāyaṇam Mahābhārata	SAN-A-CC-2-TH/TU	Human Values, Ethics, Gender & Environment sustainability
Śukanāsopadeśa	SAN-A-CC-3-TH/TU & SAN-G-CC-A2-TH/TU	Professional Ethics
Rājavāhanacaritam Fables: Origin & Development	SAN-A-CC-3-TH/TU	Human Values & Ethics
Abhijñānaśakuntalam	SAN-G-CC-A3-TH/TU	Human Values & Environment sustainability
Gītā : Cognition and emotive apparatus Gītā : Self-management through devotion Gītā : Controlling the mind Confusion and Conflict	SAN-A-CC-4-TH/TU	Human Values & Ethics
Svapnavāsavadattam	SAN-A-CC-5-TH/TU	Human Values
Dharmaśāstra Structure of Society and Values of Life Position of Women in the Society	SAN-A-CC-7-TH/TU	Human Values & Society
Bhūmisūktam Śunḥsepakathā	SAN-A-CC-11-TH/TU	Human Values & Environment sustainability

❖ Ability Enhancement Compulsory Course: AECC – 2 :
Environmental Studies (ENVS)



UNIVERSITY OF CALCUTTA

Notification No. CSR/ 12 /18

It is notified for information of all concerned that the Syndicate in its meeting held on 28.05.2018 (vide Item No.14) approved the Syllabi of different subjects in Undergraduate Honours / General / Major courses of studies (CBCS) under this University, as laid down in the accompanying pamphlet:

List of the subjects

<u>Sl. No.</u>	<u>Subject</u>	<u>Sl. No.</u>	<u>Subject</u>
1	Anthropology (Honours / General)	29	Mathematics (Honours / General)
2	Arabic (Honours / General)	30	Microbiology (Honours / General)
3	Persian (Honours / General)	31	Mol. Biology (General)
4	Bengali (Honours / General /LCC2 /AECC1)	32	Philosophy (Honours / General)
5	Bio-Chemistry (Honours / General)	33	Physical Education (General)
6	Botany (Honours / General)	34	Physics (Honours / General)
7	Chemistry (Honours / General)	35	Physiology (Honours / General)
8	Computer Science (Honours / General)	36	Political Science (Honours / General)
9	Defence Studies (General)	37	Psychology (Honours / General)
10	Economics (Honours / General)	38	Sanskrit (Honours / General)
11	Education (Honours / General)	39	Social Science (General)
12	Electronics (Honours / General)	40	Sociology (Honours / General)
13	English ((Honours / General/ LCC1/ LCC2/AECC1)	41	Statistics (Honours / General)
14	Environmental Science (Honours / General)	42	Urdu (Honours / General /LCC2 /AECC1)
15	Environmental Studies (AECC2)	43	Women Studies (General)
16	Film Studies (General)	44	Zoology (Honours / General)
17	Food Nutrition (Honours / General)	45	Industrial Fish and Fisheries – IFFV (Major)
18	French (General)	46	Sericulture – SRTV (Major)
19	Geography (Honours / General)	47	Computer Applications – CMAV (Major)
20	Geology (Honours / General)	48	Tourism and Travel Management – TTMV (Major)
21	Hindi (Honours / General /LCC2 /AECC1)	49	Advertising Sales Promotion and Sales Management –ASPV (Major)
22	History (Honours / General)	50	Communicative English –CMEV (Major)
23	Islamic History Culture (Honours / General)	51	Clinical Nutrition and Dietetics CNDV (Major)
24	Home Science Extension Education (General)	52	Bachelor of Business Administration (BBA) (Honours)
25	House Hold Art (General)	53	Bachelor of Fashion and Apparel Design – (B.F.A.D.) (Honours)
26	Human Development (Honours / General)	54	Bachelor of Fine Art (B.F.A.) (Honours)
27	Human Rights (General)	55	B. Music (Honours / General) and Music (General)
28	Journalism and Mass Communication (Honours / General)		

The above shall be effective from the academic session 2018-2019.

SENATE HOUSE
KOLKATA-700073
The 4th June, 2018

Paul
4/6/18
(Dr. Santanu Paul)
Deputy Registrar

University of Calcutta

Under Graduate Curriculum under Choice Based Credit System (CBCS)

Syllabus for Ability Enhancement Compulsory Course-2 (AECC-2) in **Environmental Studies**

Semester-2

Total Marks-100(Credit -2)

(50 Theory-MCQ type + 30 Project + 10 Internal Assessment + 10 Attendance)

[Marks obtained in this course will be taken to calculate SGPA & CGPA]

Theory

Unit 1 Introduction to environmental studies	2 lectures
<ul style="list-style-type: none">•Multidisciplinary nature of environmental studies;•Scope and importance; Concept of sustainability and sustainable development.	
Unit 2 Ecology and Ecosystems	6 lectures
<ul style="list-style-type: none">•Concept of ecology and ecosystem, Structure and function of ecosystem; Energy flow in an ecosystem; food chains, food webs; Basic concept of population and community ecology; ecological succession.•Characteristic features of the following:<ul style="list-style-type: none">a) Forest ecosystemb) Grassland ecosystemc) Desert ecosystemd) Aquatic ecosystems (ponds, streams, lakes, wetlands, rivers, oceans, estuaries)	
Unit 3 Natural Resources	8 lectures
<ul style="list-style-type: none">• Concept of Renewable and Non-renewable resources• Land resources and land use change; Land degradation, soil erosion and desertification.•Deforestation: Causes, consequences and remedial measures•Water: Use and over-exploitation of surface and ground water, floods, droughts, conflicts over water (international & inter-state).•Energy resources: Environmental impacts of energy generation, use of alternative and nonconventional energy sources, growing energy needs.	
Unit 4 Biodiversity and Conservation	8 lectures
<ul style="list-style-type: none">•Levels of biological diversity: genetic, species and ecosystem diversity;• Biogeographic zones of India; Biodiversity patterns and global biodiversity hot spots•India as a mega-biodiversity nation; Endangered and endemic species of India•Threats to biodiversity: Habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions;•Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.•Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational value.	
Unit 5 Environmental Pollution	8 lectures
<ul style="list-style-type: none">• Environmental pollution: concepts and types,• Air, water, soil, noise and marine pollution- causes, effects and controls• Concept of hazardous waste and human health risks• Solid waste management: Control measures of Municipal, biomedical and e-waste.	

Unit 6 Environmental Policies and Practices	7 lectures
<ul style="list-style-type: none"> •Climate change, global warming, ozone layer depletion, acid rain and their impacts on human communities and agriculture •Environment Laws: Wildlife Protection Act; Forest Conservation Act. Water (Prevention and control of Pollution) Act; Air (Prevention & Control of Pollution) Act; Environment Protection Act; Biodiversity Act. •International agreements: Montreal Protocol, Kyoto protocol and climate negotiations; Convention on Biological Diversity (CBD). •Protected area network, tribal populations and rights, and human wildlife conflicts in Indian context. 	
Unit 7 Human Communities and the Environment	6 lectures
<ul style="list-style-type: none"> •Human population growth: Impacts on environment, human health and welfare. •Case studies on Resettlement and rehabilitation. • Environmental Disaster: Natural Disasters-floods, earthquake, cyclones, tsunami and landslides; Manmade Disaster- Bhopal and Chernobyl. •Environmental movements: Bishnois, Chipko, Silent valley, Big dam movements. •Environmental ethics: Role of gender and cultures in environmental conservation. •Environmental education and public awareness 	
Project/ Field work	Equal to 5 lectures
<ul style="list-style-type: none"> •Visit to an area to document environmental assets: Natural resources/flora/fauna, etc. •Visit to a local polluted site-Urban/Rural/Industrial/Agricultural. •Study of common plants, insects, fish, birds, mammals and basic principles of identification. •Study of ecosystems-pond, river, wetland, forest, estuary and agro ecosystem. 	
Total	50 Lectures

Suggested Reading:

Asthana, D. K. (2006). *Text Book of Environmental Studies*. S. Chand Publishing.

Basu, M., Xavier, S. (2016). *Fundamentals of Environmental Studies*, Cambridge University Press, India

Basu, R. N., (Ed.) (2000). *Environment*. University of Calcutta, Kolkata

Bharucha, E. (2013). *Textbook of Environmental Studies for Undergraduate Courses*. Universities Press.

De, A.K., (2006). *Environmental Chemistry*, 6th Edition, New Age International, New Delhi.

Mahapatra, R., Jeevan, S.S., Das, S. (Eds) (2017). *Environment Reader for Universities*, Centre for Science and Environment, New Delhi.

Masters, G. M., & Ela, W. P. (1991). *Introduction to environmental engineering and science*. Englewood Cliffs, NJ: Prentice Hall.

Odum, E. P., Odum, H. T., & Andrews, J. (1971). *Fundamentals of ecology*. Philadelphia: Saunders.

Sharma, P. D., & Sharma, P. D. (2005). *Ecology and environment*. Rastogi Publications.