

Syllabus for Environmental Studies (AECC-1) under CBCS

B.Sc, BA, B.Com., BBA/BCA Honours Program and Program

ENVS (AECC-1) Course- 1 (Credit – 2)

Theory (credit – 1.6)

Full Marks: 80

2018

Unit 1: Introduction to environmental studies

- Multidisciplinary nature of environmental studies
- Scope and importance; Concept of sustainability and sustainable development.

1 lecture

Unit 2: Ecosystems

- What is an ecosystem?
Structure and function of ecosystem;
Energy flow in an ecosystem: food chains, food webs and ecological succession.
Case studies of the following ecosystems:
 - a) Forest ecosystem
 - b) Grassland ecosystem
 - c) Desert ecosystem
 - d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

4 lectures

Unit 3: Natural Resources: Renewable and Non – renewable Resources

- Land resources and land-use change; Land degradation, soil erosion and desertification.
- Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations.
- Water: Use and over – exploitation of surface and ground water, floods, droughts, conflicts over water (international & inter-state), Dams – benefits and problems.
- Food resources: World food problems, changes caused by agriculture and over-grazing, effects of modern agriculture, fertilizer-pesticide problems, waterlogging, salinity.
- Energy resources: Renewable and non-renewable energy sources, use of alternate energy sources, growing energy needs, case studies

4 lectures

Unit 4: Biodiversity and Conservation

- Levels of biological diversity: genetic, species and ecosystem diversity; Bio-geographic zones of India; Biodiversity patterns and global biodiversity hotspots.
- 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

- Environmental pollution: types, causes, effects and controls; Air, water, soil and noise pollution
- Nuclear hazards and human health risks
- Solid waste management: Control measures of urban and industrial waste.
- Pollution case studies

4 lectures

Unit 6: Environmental Policies & Practices

- Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture
- Environment Laws: Environment Protection Act; Air (Prevention & Control of Pollution) Act; Water (Prevention and control of Pollution) Act; Wildlife Protection Act; Forest Conservation Act. International agreements: Montreal and Kyoto protocols and Convention on Biological Diversity (CBD).
- Nature reserves, tribal populations and rights, and human wildlife conflicts in Indian context.

3 lectures

Unit7: Human Communities and the Environment

- Human population growth: Impacts on environment, human health and welfare. Resettlement and rehabilitation of project affected persons; case studies.
- Disaster management: floods, earthquake, cyclones and landslides.
- Water conservation, rain water harvesting, watershed management.
- Wasteland reclamation.
- Environmental movements: Chipko, Silent valley, Bishnois of Rajasthan.
- Environmental ethics: Role of Indian and other religions and cultures in environmental conservation.
- Environmental communication and public awareness, case studies (e.g., CNG vehicles in Delhi).

4 lectures

(Any two of the following 1-4)

1. Visit to local polluted site (**any one**) (6)
 - a) Urban: Identify the major sources of air pollution in a city or town of North Bengal region.
 - b) Rural: Analyse the major sources of organic pollution in villages and adjoining agricultural fields.
 - c) Industry: Prepare a list of the large and medium industries in and around your college area and the probable pollutants they may produce.

2. Study of flora and fauna (**any one**) (6)
 - a) Prepare a list of the economic plants available in the college block.
 - b) List the birds sighted and found nesting at the college campus and its surroundings with the season of their occurrence.
 - c) Record insects associated with any common crop/grassland/tree of the college area with an idea of their habitat.

3. Visit to local area to document environmental assets (**any one**): (6)
 - a) Trip to any riverine system of Terai or the dooars: comment on the direction, volume and quality of water, flowing as observed.
 - b) Record the nature of vegetation/forest type/land use pattern at the site of visit.
 - c) Analyse the cause of deforestation and landslide on hill slope, if sighted.

4. Study of ecosystems. (**any one**) (6)
 - a) Pond: water parameters – turbidity, pH, producers (phyto and zooplanktons) and related consumers (fishes and birds).
 - b) Grassland on hill slope: producers (plants), insects, consumers (birds, mammals, reptiles etc.)
 - c) Forest: practical concept of forest type, stories, dominant trees and sub – dominant vegetation, observed and reported major herbivores and carnivores in a forest ecosystem.

5. Submission of a field work (covering the above practical works undertaken) (3)

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[Dr. Monoranjan Chowdhury]
Signature of the Chairmen
Board of Under-Graduate Studied
Environmental Studies