# THE UNIVERSITY OFBURDWAN

## SYLLABUS for 3-Year Degree/4-Year Hons. in

## ENVIRONMENTAL SCIENCE/EDUCATION
## (Value Added Course)

*Under*

## Curriculum and Credit Framework for

**Undergraduate Program (CCFUP), as per N.E.P. 2020)**

**w.e.f 2023 – '24**

**SEMESTER- I**
**VALUE ADDED COURSE**
**PAPER CODE: CVA 1061 [COURSE NO. 1]**
**ENVIRONMENTAL SCIENCE/EDUCATION**
**TOTAL CREDITS: 4**
**[3:1:0 :: 60+20+20]**

**TIME: 1 h 30 min** **MARKS: 60**

**Learning objectives**

- *To create awareness and understanding of the environment and its different components*
- *To get knowledge on different current environmental problems and issues in national and international levels*
- *To impart knowledge about the management practices of different environmental problems*
- *To get real life experiences of different environmental resources, ecosystems and environmental degradation*

**Unit 1: Basics of Environmental Studies:** (05)

Definition, Nature, Scope and Importance; Components of environment: Environmental education

**Unit 2: Natural Resources:** Renewable and Nonrenewable Resources (10)

Nature and natural resources their conservation and associated problems:

- Forest resources: Uses, types and importance, Joint Forest Management & symbiotic relationship between tribal population and forests, Deforestation and its effects
- Water resources: Distribution of water on Earth; Use, over exploitation of surface and ground water; Dams: Benefits and problems; Flood and Drought
- Mineral resources: Mineral resources in India; Use and exploitation, Social impacts of mining
- Food resources: World food problems and food insecurities.
- Energy resources: Renewable and Nonrenewable energy sources; Use of alternate energy sources - Case studies
- Land resources: Land as a resource; Land degradation, landslides, soil erosion, desertification
- Use of resources for sustainable development (Concepts & Goals)

**Unit 3: Ecology and Ecosystems** (08)

- Concept of ecology, Population ecology, Community ecology
- Concept of an ecosystem, different types of ecosystem
- Food chains, food webs and ecological succession
- Energy flow in the ecosystem and energy flow models

**Unit 4: Biodiversity and its conservation** (08)

Biodiversity: Levels of biological diversity

- Values of biodiversity
- Hot-Spots of biodiversity, IUCN Red Data Book, Mega-biodiversity countries
- Threat to biodiversity
- Threatened and endemic species of India

- Conservation of biodiversity (*In- situ* and *Ex-situ)*
- Ecosystem services: Ecological, Economic, Social, Ethical, Aesthetical and Informational values

**Unit 5: Environmental Pollution and Management** (08)

(a) Nature, Causes, Effects and Control measures of – Air pollution, Water pollution, Soil pollution, Noise pollution

(b) Solid waste management: Causes, effects and disposal methods; Management of biomedical and municipal solid wastes

(c) Disaster management: Floods, Earthquake, Droughts, Cyclone and Landslides

**Unit 6: Environmental Policies and Practices** (10)

Constitutional Provisions for protecting environment- Article 48(A), 51A(g)

- Environmental Laws: The Environment (Protection) Act, 1986; The Air (Prevention and Control of Pollution) Act, 1981; The Water (Prevention and Control of Pollution) Act 1974; Forest (Conservation) Act, 1980
- The wildlife Protection Act, 1972
- Climate change, Global warming, ENSO, Acid rain, Ozone layer depletion; Montreal and Kyoto Protocols

**Unit 7: Human Communities and Environment** (06)

- Human population growth; Impacts on environment
- Environment and human health: Concept of health and disease; Common communicable and Non- communicable diseases; Public health awareness programmes in India
- Environment movements in India: Chipko Movements, Silent Valley Movement, *Narmada Banchao Aandolan*

**Unit 8: Field Work Report/Project Report/Term paper** **Marks: 20**

**[Based on any one of the following topics and to be evaluated by internal teachers only)** (05)

- Environmental assets - River/Forest/Grassland/Hill/Mountain *etc*.
- Environmental pollution - Urban/Rural/Industrial/Agricultural
- Study of common Plants/Insect /Birds/Wild life *etc*.
- Study of simple ecosystems: Pond/River/Hill slope *etc*.

**Learning outcomes**

- *Understanding on environment and its importance*
- *Knowledge on different natural resources, causes of depletion and its sustainable uses*
- *Understanding the significance of biodiversity and its conservation*
- *Ideas on provisions of Indian Constitution for environmental protection*
- *Understanding the interrelationship among human population growth, environment and human health*
- *Knowledge of on-field experience on environmental issues through project work*