



**DIRECTORATE OF DISTANCE EDUCATION  
KURUKSHETRA UNIVERSITY,  
KURUKSHETRA - 136 119**

**COMMON SCHEME & SYLLABI OF**

**P.G. DIPLOMA IN ENVIRONMENTAL EDUCATION  
AND  
M.A. (PREVIOUS) ENVIRONMENTAL EDUCATION**

**Under Lateral Entry Scheme w.e.f. 2018-19**

**Scheme of Examination and Courses of Reading for Post Graduate  
Diploma in Environmental Education**

**(w.e.f. 2018-19)**

Sr. No.	Course No.	Course	Internal Assessment	Max. Marks	Total Marks
1	Paper-I	Basic Concept of Ecology	20	80	100
2	Paper-II	Population and Community Ecology	20	80	100
3	Paper-III	Environmental Pollution and Sources of Energy	20	80	100
4	Paper-IV	Major National and Global Environmental Issues	20	80	100
		Total	-	-	400

**Note :** Each Theory paper will be of 3 hours.

# **POST GRADUATE DIPLOMA IN ENVIRONMENTAL EDUCATION**

## **Syllabus (2013-14)**

### **PAPER I : BASIC CONCEPTS OF ECOLOGY**

**Max. Marks : 80+20 (Internal Assessment)**

**Time : 3 Hours**

**Note :** Nine questions will be set in all.

Question No. 1, which will be objective/short answer type covering the entire syllabus, will be compulsory.

The remaining eight questions will be set Unit-wise with two questions from each Unit I, II, III and IV.

The candidates will be required to attempt Q.No. 1 and four others, selecting one question from each Unit. All the questions carry equal marks.

#### **UNIT-I**

Basic concepts : Definition, scope and significance of Ecology; concept of biosphere, atmosphere, lithosphere and hydrosphere; components of atmosphere; concept of habitat and ecological niche.

Factors affecting environment : Abiotic factors - light (intensity, quality and duration), temperature, humidity, topography, edaphic factors; Biotic factors - microorganisms, plants, man and other animals.

#### **UNIT-II**

Laws of limiting factors; Shelford's Law of tolerance and Leibig's Law of minimum.

Autoecology and synecology : Concept, distribution and regeneration of species.

Ecosystem : Concept, kinds of ecosystem, components, properties and functions.

#### **UNIT-III**

Ecological energetics and energy flow - food chain, food web, trophic structure; concept of productivity - primary, secondary, gross and net.

Biogeochemical cycles : Concept, reservoir pool, exchangeable pool, hydrological cycle, gaseous cycles and sedimentary cycles, effect of pollution on biogeochemical cycles.

#### **UNIT-IV**

Biomes: Concept; major biomes of the world, forest, deserts and grasslands of India.

Development and evolution of ecosystem : Succession - definition, causes and types (hydrosere, lithosere): primary and secondary succession; concept of climax.

### **PAPER II : POPULATION AND COMMUNITY ECOLOGY**

**Max. Marks : 80+20 (Internal Assessment)**

**Time : 3 Hours**

**Note :** Nine questions will be set in all.

Question No. 1, which will be objective/short answer type covering the entire syllabus, will be compulsory.

The remaining eight questions will be set Unit-wise with two questions from each Unit I, II, III and IV.

The candidates will be required to attempt Q.No. 1 and four others, selecting one question from each Unit. All the questions carry equal marks.

#### **UNIT-I**

Population and its characteristics : Concept of population, population density and indices of relative abundance, basic concepts regarding rates, natality, mortality, life tables; population age distribution, population dispersion, intrinsic rate of natural increase and concept of carrying capacity, growth forms, population fluctuations and cyclic oscillations.

#### **UNIT-II**

Human population : National and International concern; world population structure and problems associated with it; Indian efforts to control the growing population.

Population regulation : Density independent and density dependent factors in population control.

Biological invasion : Concepts, reasons, dimensions and consequences; invasion of plants and animals in India and its impact on environment; population dispersal.

### **UNIT-III**

Population Interactions : Neutralism; positive interactions - commensalism, proto-cooperation, mutualism and symbiosis; negative interactions - competition, predation, parasitism, antibiosis and allelopathy; importance of negative interactions.

Community ecology : Concept of community and its characteristics; concept of ecological dominance, species composition.

Species diversity in communities.

### **UNIT-IV**

Weed ecology : Concept, impact of weeds in agroecosystem, forest, grassland and urban ecosystems; intrinsic and extrinsic factors affecting weed population density and spread; menace of *Parthenium* in India.

Concept of ecotypes, ecotones and edge effect.

## **PAPER III : ENVIRONMENTAL POLLUTION AND SOURCES OF ENERGY**

**Max. Marks : 80+20 (Internal Assessment)**

**Time : 3 Hours**

**Note :** Nine questions will be set in all.

Question No. 1, which will be objective/short answer type covering the entire syllabus, will be compulsory.

The remaining eight questions will be set Unit-wise with two questions from each Unit I, II, III and IV.

The candidates will be required to attempt Q.No. 1 and four others, selecting one question from each Unit. All the questions carry equal marks.

## **UNIT-I**

Evolution, structure and composition of atmosphere; natural components of the air and their resources - biological, geochemical and atmospheric.

Air Pollution : sources and types of air pollutants : primary and secondary pollutants; urban air pollution; emissions from automobiles; classical smog, photochemical smog; effect of air pollution on health of man and sensitive areas.

Biochemical aspects of CO, O<sub>3</sub>, PAN, Benzene and metals.

Cost of pollution; pollution management techniques.

## **UNIT-II**

Water pollution : Major kinds of water uses - domestic, agricultural, instream and industrial; water pollutants; tolerance limits; effects of water pollution; waste water treatments; possible control measures.

Other pollutions : Soil pollution, noise pollution, electronic pollution, indoor pollution, marine pollution; biological pollutants, biosocial pollutants, plastic and other chemical pollutants.

## **UNIT-III**

Solid waste management : Primary waste products - solid waste, toxic - biological and hospital wastes; methods of waste disposal - landfills, incineration, source reduction and recycling.

Toxic chemicals hazards : Toxic chemicals, toxic metals, petrochemicals, pesticides, radiations and bio - toxins movements of toxics through air, water and soil, their ecological effects.

## **UNIT-IV**

Sources of energy : Renewable energy, non-renewable sources and techniques of energy conservation; Management and conservation of natural energy resources; priority requirements of conservation at national and international level.

Ecological Impact Assessment : Concept and significance; methods of assessment.

## **PAPER IV MAJOR NATIONAL AND GLOBAL ENVIRONMENTAL ISSUES**

**Max. Marks : 80+20 (Internal Assessment)**

**Time : 3 Hours**

**Note :** Nine questions will be set in all.

Question No. 1, which will be objective/short answer type covering the entire syllabus, will be compulsory.

The remaining eight questions will be set Unit-wise with two questions from each Unit I, II, III and IV.

The candidates will be required to attempt Q.No. 1 and four others, selecting one question from each Unit. All the questions carry equal marks.

### **UNIT-I**

Protection of environment : International concerns and efforts for environmental protection; role of United Nations; Stockholm summit; priority issues; Rio summit; Sustainable Development; Earth day; Environment day; ecotourism.

Ozone depletion : Ozone as friend and foe; phenomenon, reasons and possible effects on plants, animals and man; measures to check depletion of ozone layer.

### **UNIT-II**

Global warming and climate change : Reasons, possible effects and measures to combat the problem.

Biodiversity : Concept, types and significance of biodiversity : conservation strategies; preservation of genetic diversity; global concerns and efforts; national resource conservation policy.

Forests : Major forest biomes of the world. Significance of the tropical forests; forest conservation - Indian efforts.

### **UNIT-III**

Wildlife : Distribution in India; enlistment of various zones and their characteristics; current practices in conservation of wildlife; ecosystem approach, species based approach,

*in situ* and *ex situ* conservation of threatened animal and plant species; wildlife damage : problems and management; electric fences and chemical immobilization.

Protected area network : Concept, categories and management objectives; present status of national systems; scenario of protected areas in India; theory and practice of biosphere reserves, national parks and sanctuaries.

#### **UNIT-IV**

Special projects for endangered species : Project tiger, Project Gir lion, Project elephant, Project hangul and Project crocodile.

Environmental laws : Indian and international laws.

Environmental education : Need, problems and solutions at national and international levels, environmental ethics.

#### **BOOKS RECOMMENDED**

1. Concepts of Ecology 3rd Ed. : Edward J. Kormondy,  
Prentice - Hall of India Pvt. Ltd. N. Delhi - 1991.
2. Ecology and field biology 4th Ed. : Robert - Ledo Smith  
Hooper - Collins Publishers Inc. N. Y. 10022, 1990.
3. Ecology and Environment : P.D. Sharma, 1997  
Rastogi Publications.
4. Fundamental of Ecology : E.P. Odum,  
W.B. Saunders and Toppan Co. Ltd. Tokyo, Japan.
5. Animal Ecology : S.P. Singh,  
Rastogi Publications, 1997.
6. Environmental Science : D. Botkin and E.Keller,  
John Wiley, 1995.

7. Applied Ecology : Newman E.I. 2nd Ed.

Blachwell Publ. 1994.

8. Fundamentals of Ecology by M.C. Dash,

Tata McGraw - Hill Publication Company Limited, New Delhi.