

Environmental Science/Studies Syllabus
UG Programme
Nagaland University

Credit=2, Total Marks= 50

Unit-1: Basics of Environment

Environment definition, Components of environments, Scope and significance of environment studies; Structure and function-lithosphere, hydrosphere, atmosphere and biosphere; Structure and function of an ecosystem; Food chains, food webs and ecological pyramids; Energy flow in the ecosystem; Ecological succession; Natural resources; Biogeochemical cycles; Environmental hazards and their managements; Population growth, Environment and human health; Major environmental and socio-economical problems; Sustainable development.

Unit 2: Biodiversity and its conservation

Concept of diversity; Hot-spots of biodiversity; Biodiversity at global, National and local levels; Value of biodiversity; Threats to biodiversity; Biological invasions; Endangered and endemic species; Conservation of biodiversity; In-situ and Ex-situ conservation techniques, Bioprospecting of natural resources; Biopiracy; Intellectual property rights (IPR); Indigenous traditional knowledge (ITK).

Unit 3: Environmental Pollution

Concept and scope of environmental chemistry, Classification and sources of pollutants and their global, regional and local aspects; Transport, transformation and fate of chemicals in the environment; Treatment of water and waste water; Control of air pollutants; Control devices for particulate matter; Sound pollution and its management; Management of solid waste pollution; Plastic waste; E-waste; Hazardous waste.

Recommended Books:

1. Odum, E. P., Odum, H. T. and Andrews, J., Fundamentals of Ecology. Philadelphia, Saunders, 1971.
2. Bharucha, E., Textbook for Environmental Studies, University Grants Commission, New Delhi and Bharati Vidhyapeet Institute of Environmental Education and Research, Pune, 2003.
3. Sodhi, N. S., Gibson, L. and Raven, P. HG., Conservation biology: voices from the Tropics. John Wiley and Sons, 2013.
4. Grotzinger, J. and Jordan, T.H., Understanding Earth (7th ed.), W.H. Freeman and company, 2014.
5. Singh, V. P., Elementary Hydrology, Prentice-Hall, India, 1994.
6. De, A. K., Environmental Chemistry (8th ed.), New Age Publishing Pvt. Ltd., New Delhi, 2016.
7. Manahan, S.E., Fundamental of Environmental Chemistry (8th ed.), CRC Press, Florida, 2004.
8. Handbook of Environmental Health and Safety – principle and practices (Vol. II): H.

UNDERGRADUATE SYLLABUS FOR
ENVIRONMENTAL STUDIES
UNDER SEMESTER SYSTEM
FOR
ALL BRANCHES OF HIGHER EDUCATION

ACADEMIC SESSION 2012-



NAGALAND UNIVERSITY
LUMAMI

Code: EVS-401

As per UGC guideline this is a compulsory paper for Environmental Studies (EVS). It is to be taught in various Undergraduate programmes under the Nagaland University for semester system. This syllabus includes classroom teaching followed by fieldwork. This may be taught in 25 lectures.

Credit System: The teaching will be of 2 credits.

Exam Pattern: The question paper should carry 100 marks where 30 marks shall be internal and 70 marks shall be external.

Distribution of marks:

Part A, Objective & Short answer type – 25 marks

Part B, Essay type – 45 marks

Field Work – 20 marks

Internal Assessment – 10 marks

Objective:

This paper aims to give the fundamental idea about understanding the functions of natural system. This has to be related with various man induced activities affecting the nature in a destructive manner. Students have to be practically involved to understand this process by doing field work and assessment is internal.

EVS –I (COMPULSORY)

Maximum marks: 100

Time: 3 hours

External marks: 70

Internal marks: 30

UNIT I: Ecosystem and the Environment

Max. Lecture = 06

- a. Definition, Scope and importance of Environmental studies, Need for Public awareness.
- b. Concepts of an Ecosystem, Structure and functions of an Ecosystem.
- c. Producers, Consumers and Decomposers in an Ecosystem.

UNIT II: Natural Resources

Max. Lecture = 06

- a. Renewable and non-renewable resources, Role of individual in conservation of natural resources for sustainable life styles.
- b. Use and over exploitation of Forest resources, Deforestation, Timber extraction, Mining, Dams and their effects on forest and tribal people.
- c. Use and over exploitation of surface and ground water resources, Floods, Drought, Conflicts over water, Dams- benefits and problems.

UNIT III: Biodiversity and its Conservation

Max. Lecture = 04

- a. Definition, Genetic, Species and Ecosystem diversity, Bio-geographical classification of India.
- b. Value of biodiversity: Consumptive use, Productive use, Social, Ethical, Aesthetic and option values.

UNIT IV: Environmental pollution**Max. Lecture = 04**

- a. Definition, Causes, effects and control measures of Air pollution. Water pollution and Soil pollution.
- b. Causes, effects and control measures of Marine pollution, Noise pollution, Thermal pollution, Nuclear hazards.

UNIT V: Population issues and the Environment**Max. Lecture = 04**

- a. Population growth, Variation among nations, Population explosion- Family welfare programmes, Environment and Human health, Human rights, Value education, HIV/AIDS.
- b. Woman and Child welfare, Role of information technology in environment and human health, Case studies.

Field work and Assignment**Internal Marks: 30**

- Students should submit a report at the end of the semester based on the field study on the topic chosen with prior consultation with teacher concerned. **Marks: 20**
- Assignment /seminar /debate etc. **Marks: 10**

Suggested Readings:

1. Bharucha Erach (ed) Text Book of Environmental Studies., University Press (India) Pvt. Ltd.
2. Bharucha Erach, 2003. The Biodiversity of India, Mapin Publishing Pvt. Ltd, Ahmedabad – 380013,
3. IndiaSantra S.C, (ed), Environmental Science, New Central Agency Pvt Ltd. Kolkata, India.
4. Kaushik, Anubha & Kaushik, C.P. 2006. Perspectives in Environmental Studies, New Age International (P) Ltd. Publisher, New Delhi.
5. Singh Savindra 2003. Environmental Geography, Prayag Pustak Bhawan, Allahabad.

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Code: EVS-501

This is an optional paper for Environmental Studies (EVS) against CBCS (Choice Based Credit System) in various Undergraduate programmes under the Nagaland University for semester system. This syllabus includes classroom teaching followed by fieldwork. This may be taught in 25 lectures.

Credit System: The teaching will be of 2 credits.

Exam Pattern: The question paper should carry 100 marks where 30 marks shall be internal and 70 marks shall be external.

Distribution of marks:

Part A, Objective & Short answer type – 25 marks

Part B, Essay type – 45 marks

Field Work – 20 marks

Internal Assessment – 10 marks

Objective:

This paper aims for a deeper understanding of environment and its functions. How various man induced activities are responsible for degrading environment and what are the measures to such environmental management. Students have to be practically involved to understand this process by doing field work and assessment is internal.

EVS –II (Optional CBCS)

Maximum marks: 100

Time: 3 hours

External marks: 70

Internal marks: 30

UNIT I: Ecosystem Functions

Max. Lecture = 04

- a. Energy flow in an Ecosystem, Food chains and Food webs, Ecological pyramids, Ecological succession
- b. Types, characteristics and functions of Forest, Grassland, Desert and Aquatic (Ponds, Streams, Lakes, Rivers, Oceans, Estuaries) ecosystems.

UNIT II: Natural Resources

Max. Lecture = 04

- a. Use and exploitation of Mineral resources, Environmental effects of using mineral resources, World food problems, Changes caused by Agriculture and over grazing, Effects of modern agriculture, Fertilizer- Pesticide problems, Water logging and Salinity.
- b. Growing energy needs, renewable and non-renewable energy resources, use of alternate energy resources, Land resources, Land degradation, Man-induced landslides, Soil erosion and Desertification.

UNIT III: Biodiversity and its Conservation

Max. Lecture = 06

- a. Biodiversity at Global, National and Local levels, India as a mega-diversity nation, Hotspots of biodiversity.
- b. Threats to biodiversity: Habitat loss, Poaching of wild life, Man-Wildlife conflicts.

- c. Endangered and Endemic species of India, *In-situ* and *Ex-situ* conservation of biodiversity.

UNIT IV: Environmental pollution

Max. Lecture = 04

- a. Solid waste management and control measures of Urban and Industrial wastes.
- b. Role of individual in prevention of pollution, Pollution case studies.
- c. Disaster management: Floods, Earthquakes, Cyclones and Landslide management.

UNIT V: Social issues and the Environment

Max. Lecture = 06

- a. Urban problems related to energy, Water conservation, Rainwater harvesting, watershed management, Resettlement and rehabilitation of people; its problems and concern, Case studies.
- b. Wasteland reclamation, Consumerism and waste products, Climate change, Global warming, Acid rain. Ozone layer depletion, Nuclear accidents and holocaust.
- c. Environmental protection Act: Air and Water prevention and control of pollution Act, Wildlife protection Act, Forest conservation Act, Issues involved in enforcing of environmental legislation.

Field work and Assignment

Internal Marks: 30

- Students should submit a report at the end of the semester based on the field study on the topic chosen with prior consultation with teacher concerned. **Marks: 20**
- Assignment /seminar /debate etc. **Marks: 10**

Suggested Readings:

1. Agarwal KC, 2001. Environmental Biology, Nidi Publishers Ltd. Bikaner.
2. Bharucha Erach (ed) Text Book of Environmental Studies., University Press (India) Pvt. Ltd.
3. Bharucha Erach, 2003. The Biodiversity of India, Mapin Publishing Pvt. Ltd, Ahmedabad – 380013,
4. Kaushik, Anubha & Kaushik, C.P. 2006. Perspectives in Environmental Studies, New Age International (P) Ltd. Publisher, New Delhi.
5. Singh Savindra 2003. Environmental Geography, Prayag Pustak Bhawan, Allahabad.

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