Military Institute of Science and Technology

Department of Environmental, Water Resources, and Coastal Engineering

Course No: EWCE 131
Course Title: Ecology and Environmental Pollution
Credit Hour: 1.5 (out of 3.00)
Name of Instructor: Major Kazi Shamima Akter, Ph.D, Engrs

Tentative Lecture Plan

Lecture	Topics	Sub-Topics
1	Ecology and ecosystem	• Basic concept on ecology, Scope and importance of ecology • Ecological levels of organization hierarchy
2-3		• Elementary knowledge on ecological factors • Basic characteristics of ecosystem • Ecosystem structure and components • Ecosystem footprint
4	Ecosystem Diversity	• Basics on biological diversity • Benefit from biodiversity • Threat to biodiversity
5		• Biological evaluation, nature selection, symbiosis • Influence of geography and geology on biological diversity
6 -7	Food chain in ecosystem	• Ecological communities and food chain • Types of food chains • Energy partitioning in food chains and food webs • Ecological pyramids
8	Biogeochemical cycles	• General aspects of biogeochemical cycles • Hydrologic cycle
9		• Carbon cycle
10		• Nitrogen cycle • Phosphorus cycle
11		• Sulphur cycle • Nutrient and Eutrophication
12	Environmental parameters, measurement and impacts on ecology	• Atmospheric/ meteorological parameters (wind, rainfall, relative humidity, sunlight)
13		• Soil parameter (soil texture, soil moisture, water holding capacity etc)
14 -15		• Water parameter (color, temperature, pH, dissolve oxygen, turbidity, conductivity, solid content, water

		current, hardness, alkalinity, salinity, nutrient content etc)
16	Concept of pollutants and pollution (Sources, types and adverse effects of pollutants)	• Pollution from agricultural activities, pesticide and fertilizer application • Pollution from fossil fuels
17	Concept of pollutants and pollution (Sources, types and adverse effects of pollutants)	• Industrial pollution by detergents, polymers, dyes, pharmaceuticals
18 -19		• Heavy metal pollution • Noise pollution
20 -21		• Radiation hazard from nuclear energy • Pollution by solid, hazardous and toxic waste

References:

1. Environmental Science – Earth as Living Planet
Authors: Daniel B. Botkin, Edward A. Keller
8th ed., John Wiley and Sons, Inc.

2. Environmental Science – A Global Concern
Authors: William P. Cunningham, Mary Ann Cunningham
12th ed., McGraw Hill Companies

3. Fundamentals of Ecology
Authors: Eugene P. Odum, Gray W. Barrett
5th ed., Thomson Learning Inc.

4. **Part VI – General Hazards**, ILO Encyclopaedia of Occupational Health and Safety, 4th edition [www.ilocis.org/en/contilo6.html]

5. **Part IX – Chemicals**, ILO Encyclopaedia of Occupational Health and Safety, 4th edition [www.ilocis.org/en/contilo9.html]

6. **Chapter 53 - Environmental Health Hazards**, Part VII – The Environment, ILO Encyclopaedia of Occupational Health and Safety, 4th edition [www.ilocis.org/documents/chpt53e.html]

Grading Policy:

Class Attendance	5%
Class Performance	5%
Class Test/ Assignment	15%
Mid-Term Assessment	15%
Final Examination	60%
Total	**100%**