



Federal Urdu University

of Arts, Science and Technology

Syllabus

Environmental Chemistry

(BS)

Department of Chemistry

2012

BS: 2nd Year
Semester-III

Title of the Course: Environmental Chemistry
Credit Hours: 2+0

Code: CHEM-141
Marks: 100

Atmospheric Chemiser (7 credits)

The air around us, atmospheric temperature and pressure profile, Temperature inversion and photochemical smog, particulate matter in the atmosphere, Industrial pollutants, radioactivity, atmospheric aerosols, Acid rain –major sources, mechanism, control measures and effects on buildings and vegetation, Global warming – major green house gases, mechanism, control measures and global impact, The stratospheric ozone – the ozone hole, CFCs, ozone protection, biological consequences of ozone depletion.

Water Pollution and Water Treatment (7 credits)

Sources of water pollution-industrial sources and agricultural sources, heavy metals contamination of water, Eutrophification, detergents and phosphates in water, water quality criteria, Water purification – primary, secondary and advanced treatment, Removal of nitrogen and phosphorous compounds from polluted water, organic matter in water and its decomposition.

Soil Pollution (4 credits)

Soil and mineral resources, general principles of metal extraction, Heavy metals contamination of soil, toxicity of heavy metals, bio-accumulation of heavy metals, Organic matter in soil, Macro and micro-nutrients in soil, ion-exchange in soil, soil pH and nutrients

Green Revolution (4 credits)

Pest control, pesticides, toxicity of pesticides, integrated pests management.

Energy Production and Environment (4 credits)

Liquid and gaseous fuel, hydrogen economy.

Renewable Energy (4 credits)

Nuclear energy, solar energy, geothermal and tidal energy.

Recommended Text Books

1. Collin Baird, Environmental Chemistry, W. H. Freeman and company, New York,
2. John W. Moore and Elizabeth A. Moore, Environmental Chemistry, Academic Press
3. Anil Kumar De, Environmental Chemistry, Wiley Eastern Ltd. New Delhi, 1989.
4. R. W. Raiswell, P. Brimblecombe, D. L. Dent and P. S. Liss, Edward Arnold Ltd.,
5. Staneley E. Manahan, Environmental Chemistry, Brooks, California.