

Subject Code: 2SC1000323

Subject Title: Environmental Pollution

Course Objective:

Generally awareness with the following areas in chemistry: analysis of agriculture. Opportunities for student and faculty to interact with industry. The fundamental agriculture chemistry skills to work and industrial skills to work effectively in the different fields of chemistry. The capacity to produce, divide and characterize compounds using published reactions, protocols, normal laboratory equipment, and current instrumentation.

Teaching scheme (hours) per week		Credit		Theory Examination		Practical Examination		Total
Theory	Practical	Theory	Practical	University Assessment	Cont. Assessment	University Assessment	Cont. Assessment	
2	---	2	---	35	15	---	---	50

Subject Contents			
Sr. No	Topic	Total Hours	Weight (%)
1	Unit -I Environment and its segments Ecosystems. Biogeochemical cycles of carbon, nitrogen and sulphur. Air Pollution: Major regions of atmosphere. Chemical and photochemical reactions in atmosphere. Air pollutants: types, sources, particle size and chemical nature; Photochemical smog: its constituents and photochemistry. Environmental effects of ozone, Major sources of air pollution. Pollution by SO ₂ , CO ₂ , CO, NO _x , H ₂ S and other foul smelling gases. Methods of estimation of CO, NO _x , SO _x and control procedures. Effects of air pollution on living organisms and vegetation. Greenhouse effect and Global warming, Ozone depletion by oxides of nitrogen, chlorofluorocarbons and Halogens, removal of sulphur from coal. Control of particulates.	15	50
2	Unit-II Water Pollution: Hydrological cycle, water resources, aquatic ecosystems, Sources and nature of water pollutants, Techniques for measuring water pollution, Impacts of water pollution on hydrological and ecosystems. Water purification methods. Effluent treatment plants (primary, secondary and tertiary treatment). Industrial effluents from the following industries and their treatment: electroplating, textile, tannery, dairy, petroleum and petrochemicals, agro, fertilizer, etc. Sludge disposal. Industrial waste management, incineration of waste. Water treatment and purification (reverse osmosis, electro dialysis, ion exchange). Water quality parameters for waste water, industrial water and domestic water.	15	50

Course Outcome:

- ❖ Have solid foundations in the fundamentals and purpose of current chemical and scientific theories.
- ❖ Are capable to design, carry out, record and analyze the results of chemical experiments.
- ❖ Are skillful in problems solving, significant thinking and analytical reasoning.

List of References:

Reference Books:

1. A.K.De., Environmental Chemistry, 4th ed., New Age International (P) Limited, New Delhi 2001.

2. Industrial Chemistry by B.K.Sharma.
3. E. Stocchi: *Industrial Chemistry*, Vol-I, Ellis Horwood Ltd. UK.
4. R.M. Felder, R.W. Rousseau: *Elementary Principles of Chemical Processes*, Wiley Publishers, New Delhi.
5. J. A. Kent: Riegel's *Handbook of Industrial Chemistry*, CBS Publishers, New Delhi.
6. S. S. Dara: *A Textbook of Engineering Chemistry*, S. Chand & Company Ltd. New Delhi.
7. K. De, *Environmental Chemistry*: New Age International Pvt., Ltd, New Delhi.
8. S. M. Khopkar, *Environmental Pollution Analysis*: Wiley Eastern Ltd, New Delhi.
9. S.E. Manahan, *Environmental Chemistry*, CRC Press (2005).
10. G.T. Miller, *Environmental Science* 11th edition. Brooks/ Cole (2006).
11. A. Mishra, *Environmental Studies*. Selective and Scientific Books, New Delhi (2005).

e-Resource:

1. www.google.com
2. <http://onlinelibrary.wiley.com/>
3. <https://en.wikipedia.org/wiki>