

CORE COURSE IX (CC) - WATER QUALITY MANAGEMENT

UNIT 1:

Introduction to Marine Chemistry- origin of oceans, physical and chemical properties of water, structure of water molecules, difference between fresh and sea water.

UNIT 2:

Chemical composition of sea water- ionic composition - major and minor elements- trace elements-the importance, analytical chemistry of key constituents-concept of chlorinity and salinity of sea water- methods of measurement- desalination.

UNIT 3:

Dissolved gases- carbon dioxide- origin importance and distribution, oxygen, nitrogen, hydrogen sulphide noble gases- methane. Organic matter-classification –composition, estimation and distribution of humic substances.

UNIT 4:

Nutrients : inorganic nutrients, origin, role in fertility of the sea. Kinds of nitrogen, phosphorus and silicon in the sea, distribution and cycling, N:P ratio.

UNIT 5:

Marine pollution : Types and sources. Monitoring methods- biological indicator. Toxicology- lethal and sub-lethal effects of pollutants to marine organisms. Bio-concentration, bio-accumulation and bio-magnification.

TEXT BOOKS

1. Riley, J.P. and R.Chester, 1971. Introduction to Marine Chemistry. Academic press, London.
2. Riley, J.P.and G.Skirrow, 1975-1984. Chemical Oceanography, vols.1 to 8. Academic press, London.
3. Strickland, J.D.H. and T.R.Parsons, 1972. A practical Handbook of Seawater analysis. Fisheries Board of Canada, Ottawa, Bulletin, 167.
4. Johnston, R. (Ed), 1976. Marine Pollution. Academic Press, London.
5. Goldberg, E.D.1976. The Health of the Oceans. Unesco press, Paris.