PROCESS CHEMISTRY FOR WATER AND WASTEWATERTREATMENT

Environmental Chemistry Basic concepts from general chemistry: chemical equations, types of chemical reactions, calculations from chemical equations, solutions, activity and activity coefficients, chemical equilibria, chemical thermodynamics, factors affecting chemical equilibrium. Gas laws.

Acid Base Equilibria: fundamentals, equilibrium diagrams, alkalinity and acidity, the carbonic acid system, buffering in water systems, measuring alkalinity.

Solubility Equilibria: Solubility equlilibria for slightly soluble salts, effect of other solutes on salt solubility, removal of heavy metals from complex water and wastewater systems.

Oxidation reduction Equlilibria: oxidation reduction processes galvanic cell and chemical thermodynamics, stability diagrams measuring redox potentials.

Water Stabilization: Electrochemical aspects of corrosion, water stabilization, Langelier saturation index, Caldwell Lawrence diagrams, Water softening and neutralization: chemical precipitation, ion exchange Application of Redox Chemistry:

TEXT BOOKS

1. Benfield, L.D.; Weand, B.L.; Judkins, J.F. (1982) *Process chemistry for water and wastewater.* Prentice Hall Inc Englewood Cliffs New Jersey.
2. Weber Jr., W.J. (1972) *Physico-chemical Process for Water Quality Control.* Wiley Inc. Newyork.