

Course Name:

Process principles in environmental engineering

Course Number:

20604

Credit:

3

Course Content (outline):

- Process principles for conversion and transport of contaminants in environmental systems
 - Material balance, chemical equations, and reaction kinetics
 - Principles of reactors and their application in environmental systems
 - Principles of mass transfer in environmental systems
- Fundamentals of physical removal of materials
 - Adsorption process
 - Filtering process
 - Membrane processes
 - Sedimentation, coagulation and flocculation processes
- Fundamentals of chemical processes
 - Acidic and alkaline chemistry and carbonate systems
 - Solubility and deposition
 - Oxidation–reduction

References:

- “Environmental Systems and Processes: Principles, Modeling, and Design”, Weber, W.J., Jr., John Wiley & Sons, New York, 2000.
- “Transport Modeling for Environmental Engineers and Scientists”, Clark, M.M., John Wiley & Sons, New York, 1996.
- “Chemical Fate and Transport in the Environment”, Hemond, H.F., and Fechner-Levy, E.J., Academic Press, 2nd Ed., London, 2000.
- “Handouts, Papers and Reports”