



# Water and Waste water Treatment

**Duration :** All short courses between 3-5 days

## Program Details

Basic water chemistry. Biological, chemical and physical water quality parameters.

Hydrological cycle, significance of Dissolved Oxygen.

### Characteristics of water and their measurement:

Overview of water and wastewater treatment processes. Physical characteristics -Turbidity, color, Suspended solids, temperature, pH Chemical Characteristics - Bicarbonates, Total dissolved solids, Salinity, Hardness, Nitrogen, Phosphorous. Biological properties - Algae, bacteria, fungi. Physical-chemical treatment processes.

**Water treatment methodology:** Desalination- Multistage Flash distillation, Reverse Osmosis, Solar desalination, softening.

**Wastewater treatment:** Parameters - BOD, COD,DO, TSS, TDS, Stages of treatment- Preliminary treatment- Screening, grit chamber, skimmers, pre aeration, primary Treatment-Sedimentation,Coagulation, flocculation. Secondary treatment - Aeration, Biological treatment processes, Sludge treatment and disposal.Tertiary treatment: Filtration, Disinfection, Dechlorination.

Solid waste disposal methods-Composting, drying, Incineration.

Advances in water and wastewater treatment- Activated carbon adsorption, nano solar photo catalysis, nano filtration.

**Basics of effluent treatment plant design:** Case study on selected industries [ Oil refinery, Desalination, Textile]

## Learning Outcomes

- Acquire basic knowledge on the main physical chemical and biological characteristics and their effects on living organisms.
- Understand principles of various processes applicable to industrial wastewater treatment
- Understand treatment methodology for sea water and ground water and familiarise with the laboratory methods for analysis of water and wastewater.
- Realise few latest technologies used in water and wastewater treatment
- Experience hands on training in sophisticated instruments used in waste water analysis
- Comprehend basics behind Design of Effluent treatment plant
- Visit local desalination plant and wastewater treatment plant.

## Target Participants

Professionals working in related field / fresh recruits having diploma /degree in Chemical engineering, Process engineering or any other allied fieldwith relevance to the course and with strong background of Physics, Chemistry and Maths. Engineers/technicians/operators working in process industries dealing with industrial pollution control, wastewater treatment and its disposal. Academicians involved in teaching and/or research activities in the area of wastewater treatment and sludge management.