

**Course Title:** Basics of water and wastewater treatment

**Number of Credits: 3**

**Prerequisite (Corequisite): Structural analysis (I), Concrete Technology** Lecturer: -

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**Course Topic water treatment**

- A review of the physical, chemical and biological processes of water treatment
- Water quality ,water quality standards ,common goals and methods of water treatment
- Ventilation, definition ,application of common types of aeration systems
- Sedimentation: definition ,application ,types of sedimentation ponds and sedimentation with the help of chemicals including :definition ,application coagulation ,mixing and ...
- Hardening: definition ,application ,types of hardening processes
- Anaerobic wastewater treatment reactors
- Final treatment :disinfection ,removal of nitrogen and phosphorus ,removal of suspended solids and parasite egg, removal of biodegradable materials
- Excess sludge treatment :calculating: the amount of excess sludge ,concentrating ,digestion, dehydration and excretion
- Components of water treatment plants (components of water treatment plants, principles of selection of suitable treatment processes according to water quality(

**Wastewater treatment**

- A review of the physical ,chemical ,and biological processes of wastewater treatment
- Features of urban wastewater and its comparison with industrial wastewater ,the necessity and importance of wastewater treatment,forecasting,collection and measurement of required data and information ,wastewater generation resources treatment purposes , common methods of wastewater treatment
- Physical treatment :littering ,balancing ,granulation ,flotation ,settling (theory, types, factors influencing settling)
- biological treatment :principles of biological treatment ,biological reactors, biological processes ,familiarity with common systems of biological treatment ,including: nature pond ,aerated lagoon ,activated sludge ,dripping filter, biological rotating beds and...
- Taste and smell control: the origin of taste and smell ,measurement and existing standards ,prevention and control of taste and smell
- Filtration: definition, application, types of common methods ,fast and slow sand filter
- Disinfection: definition and application ,common types of disinfection methods

Course Description:

Reading Sources:

Course Goals and objectives:

Evaluation:

Course topics:

The course aims to: