Syllabus of

Fundamental of Water and Wastewater Treatment

Credit=2,0 unit

Contact hours=32

Prerequisite : analytical chemistryII

Topic covered are :

-Introduction,water use trends and projection

-water sources and supplies,natural water cycle and variation of water quality,chemical and physical

Concepts of water

-water polutions,sources of pollutants :chemical ,physical,biological,gasues,radioactives

-Quality objects for different uses of water, quality aspects , standards for drinking water ,laboratory

Rules,report of water analysis , QC regulations

-General methods for water treatments,primery treatments(bar screen,grit,settling,aeration),basic

Sedimentation,clarification methods , coagulation method and factors, Jar test, filtration ,filters

-Water softening , chemical process , ion exchenge method,Ion exchange basics,applications in

Water treatments , regeneration methods

-Degasing theoretical aspects , degasators ,chemical degassing

-TDS reducing methods including distillation , ion exchange ,RO ,electrodialysis

-Water treatment plants,components and fundamentals for planning ,urban water treatment plant

-Industrial water uses ,specification of water for heat transfer units , boilers , steam generators,methods

For water treatments subjects to reduce :TDS ,hardness,alkalinity, corrosion, foaming ,Si , Mn

-Westewater treatment metods,primery ,secondary , advance treatment,biological pollutant reducing

Methods,activated sludge,alternate systems ,desinfaction ,sludge disposal

-Industerial wastewater specifications ,special treatments

-Economy