BACHELORS WITH WATER MANAGEMENT AS MAJOR (CT – I)
6th SEMESTER

WMG622J1 WATER MANAGEMENT _ WATER AND WASTE WATER ENGINEERING

CREDITS: THEORY: 3, PRACTICAL: 1

***COURSE OUTCOME**:*

This course is framed to give the basic understanding of water and waste waters and application of theoretical principles and processes for water and waste water treatmentprocesses and operations. Design and working of STP is taught through the intensive field visits. This course has also potential to provide a good technical human resource to cope up with the ever-increasing demand for water and waste water resource management.

UNIT I: FUNDAMENTALS OF WASTE WATER ENGINEERING

Waste water and waste water Engineering: Historical context and an overview, Composition and classification of microbes in waste water treatment, Characteristics of diverse constituents in waste water: Physical, metallic, nonmetallic, organic and biological, Health and environmental concerns in waste water treatment

UNIT II: PHYSICAL AND CHEMICAL TREATMENTS PROCESSES

Flow equalization, Screening, sedimentation, Filtration, coagulation and flocculation, aeration, floatation, Precipitation, oxidation, adsorption, ion exchange, distillation, Membrane filtration

UNIT III: BIOLOGICAL TREATMENT AND DISINFECTION

Treatment methods and technologies: Primary, Secondary and Tertiary (Advanced), Trickling filter, Activated sludge, Rotating Biological contractors, Fluidized Bed Reactor(FBR), Sequencing Batch Reactor (SBR), Membrane Bioreactor (MBR), Disinfection theory: methods and means

PRACTICAL:

1. Field visit to a nearby Sewage Treatment Plant
2. Determination of Sedimentation rate in STPs
3. Determination of optimum coagulant dosage
4. Determination of Sludge volume index (SVI) and F/M ratio

SUGGESTED READINGS:

1. Basic of Environmental Technology: Nathanson
2. Environmental Engineering: P. Venugopala Rao.
3. Elements of Environmental Engineering: Kalliat T. Valsaraj
4. Pollution Management: S.K. Agarwal
5. Handbook of Induastrial Pollution and Control: Bhatia
6. Fundamental of Water and wastewater: Krishna Gopal
7. Water Pollution Control: Helmer and Hespenhol
8. Waste water microbiology: Gabriel Bitton
9. Waste water and disposal: Paul T.Williams
10. Waste water management: Klein Gomes
11. Waste water treatment-concepts and design approach: G.L.Karia and R.A.Christian
12. Water and waste water technology: Merk.J.Hammer and Mark.J.Hammer Jr.
13. Waste Water Engineering, Metcalf and Eddy