III Year - II Semester 20CE6321

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INDUSTRIAL WASTE MANAGEMENT

Course Learning Objectives:

The course will address the following

- Enables the student to distinguish between the quality of domestic and industrial water requirements and waste water quantity generation.
- To impart knowledge on selection of treatment methods for industrial waste waters.
- To know the common methods of treatment in different industries.
- To acquire knowledge on operational problems of common effluent treatment plant.

Course Outcomes:

Upon the successful completion of this course, the students will be able to:

- Suggest low cost techniques for Volume and Strength reduction of any industrial waste waters.
- Suggest waste treatment methods for Steel plants, Fertilizers, Textiles, Paper and Pulp industries and Oil Refineries.
- Suggest waste treatment methods for Tanneries, Sugar Mills, Distillers, Dairy and Pharmaceutical Plants.
- Suggest waste water disposal method for any industrial waste waters.
- Suggest advanced waste water treatment method for industrial waste waters

UNIT-I

Basic theories of Industrial Wastewater Management: Wastewatercharacterization-Toxicityofindustrialeffluents-Treatmentofwastewater-unit operations and processes-Volume and Strength reduction –Neutralization–Equalization and proportioning-recycling, reuse and resources recovery

UNIT-II

Process and Treatment of specific Industries-1:Manufacturing Process and origin, characteristics, effects and treatment methods of liquid waste from Steel plants, Fertilizers, Textiles, Paper and Pulp industries and Oil Refineries.

UNIT – III

Process and Treatment of specific Industries-2: Manufacturing Process and origin, characteristics, effects and treatment methods of liquid waste from Tanneries, Sugar Mills, Distillers, Dairy and Pharmaceutical Plants.

UNIT-IV

Industrial waste water disposal management: discharges into Streams, Lakes and oceans and associated problems, Land treatment- Common Effluent Treatment Plants: advantages and suitability, Limitations and challenges.

UNIT-V

Advanced wastewater treatment: Use of Municipal waste water in Industries— Adsorption, Reverse Osmosis, Ion Exchange, Ultra filtration, Freezing, elutriation, Removal of Ironand Manganese, Removal of Colour and Odour.

Text books

- 1. Wastewater Treatment by M.N. Rao and A.K. Dutta, Oxford & IBH, New Delhi.
- 2. Industrial Waste water Treatment by KVSG Murali Krishna.
- 3. Industrial Wastewater treatment by A.D. Patwardhan, PHI Learning, Delhi.
- 4. Wastewater Treatment for Pollution Control and Reuse, by Soli. J Arceivala, Shyam RAsolekar, Mc-Graw Hill,New Delhi; 3r^dEdition.

References

- 1. Industrial Water Pollution Control by W.Wesley Eckenfelder,Mc-Graw Hill, Third Edition
- 2. Waste water Engineering by Metcalf and Eddy Inc., Tata Mc Graw hill Co., New Delhi
- 3. Waste water Treatment-Concepts and Design Approach by G.L.Karia & R.A. Christian, Prentice Hall of India.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	2	3	2	3	3	1	1	1	1	3	2	3	2
CO2	3	3	2	3	2	3	3	1	1	1	1	3	2	3	2
CO3	3	3	2	3	2	3	3	1	1	1	1	3	2	3	2
CO4	3	3	2	3	2	3	3	1	1	1	1	3	2	3	2
CO5	3	3	2	3	2	3	3	1	1	1	1	3	2	3	2