

GEDX 229	WASTEWATER MANAGEMENT	L	T	P	C
SDG: 6		3	0	0	3

COURSE OBJECTIVES:

COB1: To impart knowledge on the generation , type and characteristics of domestic wastewater

COB2: To give an insight on the principle of domestic wastewater treatment

COB3: To familiarize the characteristics of industrial wastewater and its treatment methods

COB4: To provide exposure about the cycle of sanitation and stages of septage management

COB5: To impart knowledge on the advanced techniques in sewage treatment

MODULE I WASTEWATER GENERATION 9

Wastewater generation - Types of domestic wastewater - Types of sewerage system - Storm water management - Flow estimation - Sewage characteristics –Impact of untreated effluents on land and water - Pollution Control Rules and Environmental legislation.

MODULE II DOMESTIC WASTEWATER TREATMENT 9

Onsite and offsite challenges in wastewater treatment – Stages of wastewater treatment – Principles and Functions of treatment process - Working of Septic tanks - Onsite grey water treatment - wetland treatment - Capturing nutrients - Stages in Sludge management

MODULE III INDUSTRIAL WASTEWATER TREATMENT 9

Sources and characteristics of industrial wastewater - Effects of Industrial wastes on sewerage system - Sewage treatment plants and receiving water bodies -Standards related to industrial wastewater - Pre-treatment - Waste volume reduction, waste strength reduction, neutralization, equalization and proportioning, Removal of Organic and inorganic dissolved solids

MODULE IV SEPTAGE TREATMENT 9

Full cycle of sanitation - Sustainable practices in capture and containment - Septage treatment using Drying beds, Planted drying bed, Anaerobic digestion - Disposal and resource recovery - Challenges in operation and maintenance of receiving and treatment facilities

MODULE V ADVANCED TREATMENT METHODS AND REUSE 9

Advances in sewage treatment – Microalgae based wastewater treatment technologies – Advances in membrane technology - Thermal hydrolysis technology for sludge treatment – Biogas generation - Wastewater Reuse and Recycle - Regulations Standards - Types of Reuse – Agriculture - Groundwater Recharge.

L – 45; TOTAL HOURS – 45

TEXT BOOKS:

1. Mackenzie L. Davis,. “Water and Wastewater Engineering: Design Principles and Practice”, Second Edition (McGraw-Hill Education: New York, 2020).
2. Metcalf and Eddy, “Wastewater Engineering Treatment, Disposal and Reuse”, Tata McGraw Hill, 2007.
3. Narayana Rao M and Amal K. Datta “Wastewater Treatment, Rational methods of Design and Industrial practices”, Oxford and IBH Publications, Third Edition, New Delhi, Reprint 2009
4. Strande, L., Ronteltap, M., and Brdjanovic, D., Fecal Sludge Management: Systems Approach for Implementation and Operation, IWA Publishing, 2014.

REFERENCES:

1. Athar Hussain, Sirajuddin Ahmed. “Advanced Treatment Techniques for Industrial Wastewater”, IGI Global, USA, 2018.
2. Arceivala, S.J., “Wastewater Treatment for Pollution Control & Reuse”, McGraw-Hill, New Delhi, 3rd Edition, 2006.
3. NG Wun Jern. “Industrial Wastewater Treatment”. World Scientific, Imperial College Press, Singapore, 2020.
4. Patwardhan, A. D, “Industrial Wastewater Treatment”, PHI Learning (P) Ltd., New Delhi, 2017.
5. Operative Guidelines for Septage Management for Local Bodies in Tamil Nadu, Municipal Administration and Water Supply Department Government of Tamil Nadu, 2020.

COURSE OUTCOMES:

At the end of the course the student will be able to

CO1:describe the types of wastewater, its generation and characteristics

CO2: explain the treatment of domestic wastewater.

CO3:identify and suggest the treatment methods relevant to the industrial wastewater

CO4:illustrate the current practices for septage management

CO5: describe the advanced treatment methods and recommend options for reuse

Board of Studies (BoS) :

18th BoS of CE held on
05.04.2023

Academic Council:

20th Academic Council held on
13.04.2023

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1			L			M	H					M			H
CO2			L			M	H					M			H
CO3			L			M	H					M			H
CO4			L			M	H					M			H
CO5			L			M	H					M			H

Note: L- Low Correlation M - Medium Correlation H -High Correlation

SDG No.6 :Ensure availability and sustainable management of water and sanitation for all

The knowledge on the Domestic and industrial wastewater management along with the sanitation would cater the development of infrastructure aiming to reduce pollution and safeguard the environment.