	National Institute of Technology Meghalaya An Institute of National Importance	CURRICULUM

Programme	**Master of Technology**	Year of Regulation	**2025**
Department	**Civil Engineering**	Semester	**I**

Course Code	Course Name	Pre-requisite	Credit Structure				Marks Distribution			
			L	T	P	C	INT	MID	END	Total
CE 547	**Public Health Engineering**	**NIL**	**3**	**0**	**0**	**3**	**50**	**50**	**100**	**200**

Course Objectives	1. To understand the role of public health engineering in ensuring environmental sanitation and safe water supply. 2. To study the principles and design of water supply, wastewater, and solid waste systems. 3. To learn about disease prevention through sanitation and hygiene interventions. 4. To evaluate health risks associated with environmental contaminants. 5. To integrate sustainable and resilient infrastructure for public health	Course Outcomes	CO1	Able to explain the principles of water supply, sanitation, and waste management in the context of public health..
			CO2	Able to design and assess water supply and wastewater systems for urban and rural areas.
			CO3	Able to analyze the impact of environmental conditions on communicable and waterborne diseases.
			CO4	Able to apply public health engineering approaches for improving community health and hygiene.
			CO5	Able to integrate sustainable practices and policy frameworks into public health infrastructure planning.

SYLLABUS

No.	Content	Hours	COs
I	**Introduction to Public Health Engineering:** Definition and scope of public health engineering; Linkages between environment, water, sanitation, and public health; Historical development and current challenges in India and globally; Waterborne, vector-borne, and sanitation-related diseases	6	CO1, CO2
II	**Water Supply Systems:** Source selection and water demand estimation; Design of intake structures, pumping stations, and pipelines; Water treatment processes and plant design (sedimentation, filtration, disinfection); Storage and distribution systems	6	CO2, CO3, CO4
III	**Wastewater Engineering:** Characteristics of domestic and industrial wastewater; Sewerage systems: collection, conveyance, and design; Wastewater treatment methods: primary, secondary, tertiary; Sludge treatment and disposal	5	CO2, CO3, CO4
IV	**Stormwater and Drainage Systems:** Principles of stormwater drainage and urban runoff management; Combined and separate sewer systems;Design of stormwater drainage systems; Urban flooding and sustainable urban drainage systems (SUDS)	7	CO2, CO3, CO4
V	**Solid Waste Management and Sanitation:** Types and sources of solid waste; Waste collection, segregation, transport, and disposal; Composting, incineration, and sanitary landfill design; Community and household sanitation, toilet technologies, faecal sludge management	9	CO4, CO5
VI	**Health Risk Assessment, Policies, and Sustainable Practices:** Environmental risk assessment methods; Health surveillance and outbreak management; National policies and programs: SBM, AMRUT, Jal Jeevan Mission; Sustainable infrastructure for public health resilience; Case studies on urban and rural health engineering interventions	9	CO4, CO5
	Total Hours	**42**	

Essential Readings

1. Arceivala, S. J., Asolekar, S.R., Wastewater treatment for pollution control and reuse (3rd ed.). New Delhi: Tata McGraw Hill, 2007.
2. S.K. Garg – *Water Supply and Sanitary Engineering*, Khanna Publishers, 2010.
3. Kaleekkal, N.J (Ed.) Sustainable technologies for water and wastewater treatment. Boca Raton: CRC Press, 2021.

Supplementary Readings

1. CPHEEO Manuals – Government of India publications on water supply and sanitation
2. WHO Guidelines – Water, Sanitation, and Hygiene (WASH) for Health
3. Eaton, Andrew D. (et al.) (Eds.) Standard methods for the examination of water and wastewater (21st ed.). Washington: American Public Health Association, 2005.