Course Number and Name

BCE081 - WATER AND SEWAGE CONVEYANCE

Credits and Contact Hours

3 & 45

Course Coordinator's Name

Ms. L.MARIA SUBASHINI

Text Books and References

REFERENCES:

- G.S.Bajwa, Practical Handbook on Public Health Engineering, Deep Publishers, Shimla, 2003.
- "Manual on water supply and Treatment", CPHEEO, Ministry of Urban Development, Gol, New Delhi, 1999.
- "Manual on sewerage and Sewage Treatment', CPHEEO, Ministry of Urban Development, Gol, New Delhi, 1993.
- B.A. Hauser, Practical Hydraulics Handbook, Lewis Publishers, New York, 1991.

Course Description

- To educate the students in detailed concepts related to water transmission mains, water distribution system, sewer networks and storm water drain, with emphasis on computer application

Prerequisites	Co-requisites
Applied Hydraulic Engineering	NIL

required, elective, or selected elective (as per Table 5-1)

Course Outcomes (COs)

CO1	To make them understand the fundamentals of hydraulic engineering and the various fluid flow phenomenon
CO2	To understand about the methods of water transmission and distribution and the economics related to water transmission
CO3	To understand in detail about the waste water collection and conveyance and also the maintenance of sewers and design of sewer outfalls
CO4	To improve the knowledge on the planning and estimation of storm water flow.
CO5	To know about the basics of the Case Studies and Computer applications for water transmission..

Student Outcomes (SOs) from Criterion 3 covered by this Course

COs/SOs	a	b	c	d	e	f	g	h	i	j	k
CO1	H									L	
CO2	H	M		M		H					L
CO3		M						H			

	CO4	H					H			L		
	CO5		M		H							

List of Topics Covered

UNIT I PRINCIPLES OF HYDRAULICS 9

Fluid properties; fluid flow – continuity principle, energy principle and momentum principle; frictional head loss in free and pressure flow, major and minor head loss, formula for estimation of head loss – pumping of fluids – selection of pumps – Flow measurement.

UNIT II WATER TRANSMISSION AND DISTRIBUTION 9

Planning factors – Water transmission main design – pipe material – economics – water hammer analysis; water distribution pipe networks - methods for analysis and optimization - Laying and maintenance, insitu lining – appurtenances – corrosion prevention – minimization of water losses – leak detection.

UNIT III WASTEWATER COLLECTION AND CONVEYANCE 9

Planning factors – Design of sanitary sewer; partial flow in sewers, economics of sewer design; sewer appurtenances; material, construction, inspection and maintenance of sewers; Design of sewer outfalls-mixing conditions; conveyance of corrosive wastewaters.

UNIT IV STORM WATER DRAINAGE 9

Planning – run-off estimation, rainfall data analysis, storm water drain design – rain water harvesting

UNITV CASE STUDIES AND COMPUTER APPLICATIONS 9

Computer applications for water transmission, water distribution and sewer design.