SRI VIDYA COLLEGE OF ENGINEERING & TECHNOLOGY

COURSE PLAN (THEORY)

ACADEMIC YEAR: 2016-2017(Even)

Subject Code	CE6503		L	P	T	C
Subject Title	ENVIRONMENTAL ENGINEERING-1		3	0	0	3
Year / Dept / Sem	III / CIVIL / V	Regulation Year	2013			
Faculty Name / Desg / Dept	Mrs. R.ANANDHALAKSHMI / Assistant Professor / CIVIL					
Course Prerequisite	1. The students must have details about basic environmental engineering 2. They have more details about water supply system.					

SYLLABUS

CE6503 ENVIRONMENTAL ENGINEERING-I L T P C

3 0 0 3

UNIT I PLANNING FOR WATER SUPPLY SYSTEM 8

Public water supply system -Planning - Objectives -Design period - Population forecasting - Water demand -Sources of water and their characteristics -Surface and Groundwater- Impounding Reservoir Well hydraulics -Development and selection of source - Water quality - Characterization and standards- Impact of climate change.

UNIT II CONVEYANCE SYSTEM 7

Water supply -intake structures -Functions and drawings -Pipes and conduits for water- Pipe materials - Hydraulics of flow in pipes -Transmission main design -Laying, jointing and testing of pipes - Drawings appurtenances - Types and capacity of pumps -Selection of pumps and pipe materials.

UNIT III WATER TREATMENT 12

Objectives - Unit operations and processes - Principles, functions design and drawing of Chemical feeding, Flash mixers, flocculators, sedimentation tanks and sand filters - Disinfection- Residue Management - Construction and Operation & Maintenance aspects of Water Treatment Plants.

UNIT IV ADVANCED WATER TREATMENT 9

Principles and functions of Aeration - Iron and manganese removal, Defluoridation and

demineralization -Water softening - Desalination - Membrane Systems - Recent advances.

UNIT V WATER DISTRIBUTION AND SUPPLY TO BUILDINGS 9

Requirements of water distribution -Components -Service reservoirs -Functions and drawings - Network design -Economics -Computer applications -Analysis of distribution networks - Appurtenances - operation and maintenance -Leak detection, Methods. Principles of design of water supply in buildings -House service connection -Fixtures and fittings -Systems of plumbing and drawings of types of plumbing.

TOTAL: 45 PERIODS

TEXT BOOKS:

1. Garg, S.K., "Environmental Engineering", Vol.1 Khanna Publishers, New Delhi, 2005.
2. Modi, P.N. "Water Supply Engineering", Vol. I Standard Book House, New Delhi, 2005.
3. Punmia, B.C., Ashok K Jain and Arun K Jain, "Water Supply Engineering", Laxmi Publications Pvt. Ltd., New Delhi, 2005

REFERENCES:

1. Government of India, "Manual on Water Supply and Treatment", CPHEEO, Ministry of Urban Development, New Delhi, 2003
2. Syed R. Qasim and Edward M. Motley Guang Zhu, "Water Works Engineering Planning", Design and Operation, Prentice Hall of India Private Limited, New Delhi, 2006.

Course Objectives (CO)	CO1: To study the sources of water and distribution of water supply. CO2: To develop the knowledge about treatment of
Expected Course Outcomes (ECO)	At the end of the course, the students should be able to: ECO1. Know about collection and transfer of water ECO2. To gain knowledge in the disposal of solid waste ECO3. Identify the distribution system of water ECO4. Gain knowledge in treatment of water ECO5. Identify the suitability of plumbing system in different sources.

Mapping of CO & PO(Specify the PO's) - *(Fill the col.s with the legend given below)*

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	2	2	1	-	-	-	-	-	-
CO2	2	-	-	-	1	-	-	-	-	-	-	-
CO3	1	3	2	-	-	-	-	-	-	2	-	1

CO4	-	2	1	-	-	3	-	-	-	-	-	2
CO5	3	1	-	-	-	-	2	-	-	1	-	-
CO6	2	2	1	-	-	-	1	-	-	-	-	1

(Additional Topics beyond syllabus/Seminars/Assignments)	1: Self purification of river 2: Rain waterharvesting
Related Website URLs	W1: *www.unc.edu* W2: *http://nptelo.ac.in/courses/105101004*
Related Video Course Materials (min. 3 no.s)	*V1: https://www.youtube.com/watch?v=P21-CaACmEI* *V2: https://www.youtube.com/watch?v=8isr9nSDCK4* *V3: https://www.youtube.com/watch?v=Rq16SYIG2_o*

S.No	Topic Name	Book – P. No	Teaching Aids	No of hrs	Cumulative hrs
	UNIT I PLANNING FOR WATER SUPPLY SYSTEM				
1.	Introduction to unit 1	-	Class room teaching	1	1
2.	Public water supply system - Planning - Objectives -Design period - Population forecasting - Water demand -Sources of water and their characteristics -Surface and Groundwater- Impounding Reservoir Well hydraulics	T1 1-56	Class room teaching	5	6
3.	Development and selection of source - Water quality - Characterization and standards- Impact of climate change.	T1 57-110	Class room teaching	2	8
	UNIT II CONVEYANCE SYSTEM				
4	Introduction to unit II	-	Class room teaching	1	9
5	Water supply -intake structures - Functions and drawings -Pipes and conduits for water-	T1 199-216	Class room teaching	2	11
6	Pipe materials - Hydraulics of flow in pipes -Transmission main design -	T1 219-285	Class room teaching	2	13
7	Laying, jointing and testing of pipes -	T1	Class room	1	14

	Drawings appurtenances - Types and capacity of pumps	289-301	teaching		
8.	Selection of pumps and pipe materials	T1 301-310	Class room teaching	1	15
	UNIT III WATER TREATMENT				
9.	Objectives - Unit operations and processes - Principles, functions design and drawing of Chemical feeding, Flash mixers, -.	T1 374-402	Class room teaching	4	19
10.	flocculators, sedimentation tanks and sand filters	T1 402-427	Class room teaching	3	22
11.	Disinfection- Residue Management -	T1 474-478	Class room teaching	3	25
12.	Construction and Operation & Maintenance aspects of Water Treatment Plants	T1 579-589	Class room teaching	2	27
	UNIT IV ADVANCED WATER TREATMENT				
13.	Principles and functions of Aeration - Iron and manganese removal,	T1 525-538	Class room teaching	3	30
14.	Defluoridation and demineralization	T1	Class room teaching	2	32
15.	Water softening - Desalination	T1 538-553	Class room teaching	2	34
16.	Membrane Systems - Recent advances.	T1 553-565	Class room teaching	2	36
	UNIT V WATER DISTRIBUTION AND SUPPLY TO BUILDINGS				
17.	Requirements of water distribution - Components -Service reservoirs - Functions and drawings - Principles of design of water supply in buildings -	T1 579-589	Class room teaching	1	37
18.	Network design -Economics -Computer applications -Analysis of distribution networks	T1 590-595	Class room teaching	2	39
19.	Appurtenances -operation and maintenance -Leak detection, Methods.	T1 595-615	Class room teaching	3	42
20.	House service connection -Fixtures and fittings -Systems of plumbing and drawings of types of plumbing.	T1 615-639	Class room teaching	3	45

	Prepared by		*Approved by*
Signature			
Name	Mrs.R.ANANDHALAKSHMI		Mr.P.SURESHKUMAR
Designation	Assistant Professor / CIVIL		HoD (CIVIL)
Signed date	25.06.2018		25.06.18

LEGEND:

METHODOLOGY TO MAP OBJECTIVE WITH OUTCOME

Course outcomes are achieved through

a. Suitable Analogies.
b. Class room teaching.
c. Assignments.
d. Tutorials
e. Weekly, monthly and model exams.
f. Brain storming.
g. Group discussion and role play.
h. Seminars

| Endorsed |
| Principal |