

School of Planning and Architecture: Vijayawada

(An autonomous institution established by Ministry of Human Resource Development, Govt. of India) S.No. 71/1, NH-5, Nidamanuru, Vijayawada – 521 104, Andhra Pradesh, India

Department of Architecture

Course: 10110407 Water Supply & Building SanitationClass: IV Semester B.Arch, 2017-18 A.YInstructor: RNS MurthyContact Periods/week: 02 Lecture of 50 min. eachNumber of Credits:02Internal Assessment Marks: 50External Assessment (Theory Examination): 50Total Marks: 100Min Attendance: 75%Min Passing Marks: 50% each in Internal & External Assessment,50% in Aggregate

Building science & Services - Course Objective

To equip the students of architecture about the building services related to water supply and building sanitation, so as to enable them to comprehend the subject thoroughly and integrate the learning into architectural design.

Outline for III Semester Building science & Services Course – Water and Waste management Water resources, collection, processing and distribution, internal hot and cold water supply. Domestic plumbing and sanitary fixtures. Waste and sewage disposal systems, storm water drainage. Sewage and effluent treatment, septic tanks, sewage systems for a small project. Solid waste treatment.

S.N O	WEEK	ΤΟΡΙϹ	REMARKS
1	Week –I	 General introduction to the subject. Discussion of course objectives, assignments and mode of evaluation. 	Lecture
2	Week –II	 Estimating the requirement of water. Per capita demand and split up for various occupancies. Factors affecting water consumption. Sources of surface water and sub surface water. Introduction of Assignment No: 01 – Literature study of Vernacular water management techniques. 	Lecture
3	Week –III	 Water quality and various parameters for different purposes. Purification of water – coagulation, sedimentation, filtration, disinfection, water softening. Water collection, processing, distribution, storage, distribution at larger scale. 	Lecture
4	Week –IV	 Plumbing hydraulics, basic fluid properties, static head, dynamic head, flow under gravity and pressure conditions, water hammer. Overhead and underground storage of water. 	Lecture

TEACHING PLAN

S.N O	WEEK	ΤΟΡΙϹ	REMARKS
		Types of pumps and its application.	
5	Week -V	 Presentation of Assignment No: 01 – Literature study of Vernacular water management techniques. 	PPT
6	Week –VI	 Presentation of Assignment No: 01 – Literature study of Vernacular water management techniques. 	РРТ
7	Week – VII	 Plumbing fittings and fixtures and materials specifications for distribution system. 	Workshop by expert+ Hands on experience
8	Week – VII	 Water distribution system for low raise and high raise building. Distribution and layout for spread out developments (like campus, townships etc). Fire fighting system - wet and dry standpipes, automatic fire sprinkler systems. Introduction of Assignment No: 02 - Case study of Water and waste management of various typology of building. 	Lecture
9	Week –IX	 Classification and characteristics of waste. Storm water drainage and rain water harvesting techniques. 	Lecture
10	Week –X	Written Test	
11	Week –XI	 Work shop on Plumbing fittings, fixtures and materials & specifications for drainage system. 	Workshop by experts, Hands on experience
12	Week – XII	 Collection system of waste water in building - two pipes, one pipe, single stack systems. 	Lecture
13	Week – XIII	 Collection system of waste water in building - two pipes, one pipe, single stack systems. 	Lecture
14	Week – XIV	• Waste water treatment- septic tank, sewage treatment plant and effluent treatment plant.	Lecture
15	Week – XV	 Sewerage for spread out developments (like campus, townships etc), Solid waste management. 	
16	Week – XVI	 Presentation of Assignment No: 02 - Case study of Water and waste management of various typology of building 	

S.N O	WEEK	ΤΟΡΙϹ	REMARKS
17	Week – XVII	 Presentation of Assignment No: 02 - Case study of Water and waste management of various typology of building 	
18	Week – XVIII	Revision	

Break-up of Internal Assessment Marks

S. No.	Stages of Evaluation	Weightage
1	Literature study of Vernacular water management techniques – PPT – Group work.	15
2	Case study of Water and waste management of various typology of building– PPT – Group work.	15
3	Written test	20
	Total	50

Field trips to be arranged

- 1) Field trip to Water treatment plant and distribution centre, Vijayawada.
- 2) Field trip to Sewage treatment plant and landfill site, Vijayawada.

References:

- 1. Gurcharan Singh, "Water Supply and Sanitary engineering", Standard Publishers Distributors, 2003.
- 2. Treloar, R.D, "Plumbing", Wiley-Blackwell, 2012.
- 3. Nobert, M.L, "Plumbing, Electricity, Acoustics- Sustainable design methods for Architecture", John Wiley & Sons, Inc, 2012.
- 4. Dr.B.C. Punmia et al., "Wastewater Engineering", Laxmi Publications, 1998.
- 5. Rakesh Hooja et al., "Water Management- Multiple dimensions", Rawat Publications, 2007.
- 6. Larry, W.M, "Water resources sustainability", McGraw-Hill, 2007.
- 7. Metcalf & Eddy, "Wastewater Engineering- Treatment and Reuse", Tata McGraw-Hill, 2007.
- 8. George Tchobanoglous et al, "Handbook of Solid waste Management", McGraw-Hill, 2002.
- 9. Deolalikar, S.G, "Plumbing", Tata Mc-Graw Hill, New Delhi, 1999.
- 10. Husain, S.K, "A text book of Water supply and Sanitary engineering", oxford-IBH, 1984.
- 11. Dr. B.C. Punmia et al., "Water Supply Engineering" Firewall Media, 1995.
- 12. "CPHEEO Manual on Water Supply & Treatment", Ministry of Urban Development, Government of India, May 1999(E book downloadable).
- 13. Relevant IS Codes and National building code 2005.

Sd/-(RNS Murthy) Course Instructors Sd/-(S.V.krishna Kumar) Head of the Department