Kadi Sarva Vishwavidyalaya, Gandhinagar

M.E. (Civil Infrastructure Engineering) Semester: II

(w.e.f. Academic Year 2017-18)

Subject Name: Water Supply and Drainage

Subject code: MECV205-N

A. Learning objectives:

The objective of this course is

- To study and analyze the design criteria of overall water supply and sewer system.
- To study and analyze the wells and reservoir and service storage for the water supply system.
- To prepare layout of the storm drains system.
- To design and layout of the pump station.

B. Teaching Scheme (Credits and Hours)

Teaching Scheme				Credit Scheme			Evaluation Scheme				
Lect Hrs	Tu Hrs	Prac. Hrs	Total	Theory	Pra/TW	Total	UE	IE	CIA	Prac/Viva	Total
03	00	00	03	03	00	03	70	30	20	00	120

C. Detailed Syllabus

Unit no. **Topics**

1 **Introduction**
Planning of water supply scheme, feasibility study.

2 **Surface Water Collection & Distribution:**
Intake, radial collector well, storage sump and service reservoirs, pumps and its selection.

3 **Flow Analysis:**
Measurement of flow, Appurtenances, Losses in pipes, Analysis of pipe network, introduction to pipe networking analysis software.

4 **Storm Drainage:**
Prediction of flood for urban storm drainage, Rational method, Hydraulics of flow in open channel, Hydraulic design of storm sewer.

D. Lesson Planning:

Unit No	Topics	Hours	Weightage (%)
1.	Introduction	03	7
2.	Surface Water Collection & Distribution	10	21
3.	Flow Analysis	16	36
4.	Storm Drainage	16	36
	Total	45	100

E. Instructional Method and Pedagogy (Continuous Internal Assessment (CIA) Scheme)

- At the start of course, the course delivery pattern, prerequisite of the subject will be discussed.
- Lecture may be conducted with the aid of multi-media projector, black board, OHP etc.
- Attendance is compulsory in lectures and practical which carries marks.

- At regular intervals assignments will be given. Students should submit all assignments during given period.
- Classroom participation and involvement in solving the problems in Tutorial rooms carries marks.
- Internal exam of 30 marks will be conducted as a part of Mid semester evaluation.

F. Students Learning Outcomes:

At the end of the course

- Understand the hydraulics of pressure pipe flow and open channel gravity flow.
- Determine the optimum storage capacity for the water supply system.
- Selection of the proper piping material for the water distribution system.
- Design the capacity of the elevated storage reservoir requirement.
- Perform general arrangement of a pump station with multiple pumps and its selection on the. number of pumps required for the system design.
- Perform the water network analysis to ensure the flow rate and pressure requirement are met.

G. Text Books & Reference Books:

1. Manual of Water Supply and Treatment, CPHEEO, Ministry of Urban Development, New Delhi.
2. Hydro system Engineering and Management, Mays, L.W. and Tung, Y.K., McGraw Hill New York.
3. Applied Hydrology, Chow, V.T, Maidment, D.R. and Mays, L.W., McGraw Hill.
4. Computer Assisted Floodplain Hydrology and Hydraulics, Hoggan, D.H., McGraw hill New York.
5. Water Supply Engineering, S.K.Garg, Khanna Publishers.