COLLEGE OF TECHNOLOGY AND ENGINEERING

DEPARTMENT OF CIVIL ENGINEERING

4 YEAR BE I SEMESTER SESSION 2015-16

1. Course Code : **CE 412**
2. Course Title : **WATER RESOURCES ENGINEERING**
3. Credit : 4(3+1)
4. Theory Lecture Outlines :

1.	*Surface Water Hydrology:* Hydrological Cycle
2.	*Surface Water Hydrology:* Hydrological Cycle
3.	Types & forms of precipitations
4.	Rainfall measurements & interpretation of rainfall data, missing rainfall data.
5.	Rainfall measurements & interpretation of rainfall data, missing rainfall data.
6.	*Runoff:* Factor affecting runoff, annual runoff volume
7.	Computation of runoff, infiltration indices.
8.	*Hydrograph Analysis:* Hydrograph elements and factor affecting
9.	Unit hydrograph & its applications.
10.	*Ground Water Hydrology:* Ground water aquifers. Permeability & transmissibility of aquifers:
11.	Steady flow towards a well in confined & water table aquifer (Dupits & Theims equation).
12.	Measurement of yield of an open well, tube well & infiltration galleries
13.	Measurement of yield of an open well, tube well & infiltration galleries
14.	Interference among wells (well losses, comparison of well and flow irrigation).
15.	*Reservoirs:* Planning of reservoir, types of reservoir
16.	*Reservoirs:* Planning of reservoir, types of reservoir
17.	capacity & yield of reservoir
18.	Reservoir sedimentation and useful life of reservoirs
19.	*Gravity Dams:* Force acting on a gravity dam
20.	*Gravity Dams:* Force acting on a gravity dam

21.	stability requirements
22.	stability requirements
23.	Design and construction features.
24.	Design and construction features.
25.	*Embankment Dams:* Suitable sites
26.	causes of failures
27.	Design & stability analysis (flownet, slope stability analysis, precautions of piping)
28.	Design & stability analysis (flownet, slope stability analysis, precautions of piping)
29.	*Cross Drainage Structure:* Necessity of Cross drainage structures
30.	types and selection
31.	comparative merits and demerits
32.	design of various types of cross drainage structure-aqueducts
33.	design of various types of cross drainage structure-aqueducts
34.	syphon aqueduct
35.	Super-passage syphon, level crossing and other types.
36.	Super-passage syphon, level crossing and other types.
37.	*Hydro Power Plant:* Hydro-electric power generation
38.	*Hydro Power Plant:* Hydro-electric power generation
39.	Hydro-electric plant. General features of hydroelectric projects.
40.	Hydro-electric plant. General features of hydroelectric projects.
41.	Hydro-electric plant. General features of hydroelectric projects.
42.	Numericals
43.	Numericals
44.	Revision
45.	Revision

Suggested Books & References

1.Asawa,G.L., 'Irrigation Engineering', 2nd Ed. New Age International Publisher. New Delhi.

2.Singh Bharat, 'Fundamental of Irrigation Engineering', 7th Ed, Nem Chand & Bros. Roorkee.

3.Varshney, R.S., Gupta S.C. and Gupta R.L., 'Theory and Design of Irrigation Structures'

(Dr. B.S. Singvi)

Prof.& Head (Civil Engg)