Year & Sem	Course Code: CE4601	Course Name: **Water Resource Engineering-II**	No. of Credits: 4	L	T&PS	P
				2	2	0

UNIT-I:

Irrigation & Drainage- Irrigation, crop requirements and yields, irrigation scheduling. Canals layout, stable channels, and silt control, canal losses and water-logging.

UNIT-II:

Cross Drainage Works : Introduction; Types of cross - drainage works; Selection of suitable type of cross - drainage work; Classification of Aqueducts and Syphon Aqueducts; Selection of a suitable type.

UNIT-III:

Diversion Head Works : Component parts of a Diversion Head work; Types of weirs; Causes of failure of weirs and their remedies; Weirs on permeable foundations. Design of weirs–Bligh's creep theory, Lane's weighted creep theory and Khosla's theory; Silt control at head works

UNIT-IV:

Reservoir Planning: Introduction; Investigations for reservoir planning; Selection of site for a reservoir; Zones of storage in a reservoir; Storage capacity and yield; Mass inflow curve and demand curve; Calculation of reservoir capacity for a specified yield from the mass inflow curve; Determination of safe yield from a reservoir of a given capacity; Reservoir sedimentation; Life of reservoir; Reservoir sediment control; Multipurpose reservoir, flood routing; Methods of flood routing-Graphical Method (Inflow – storage discharge curves method), Trial and error method.

UNIT-V:

Dams in General: Introduction; Classification; Gravity dams, Arch dams, Buttress dams, Steel dams, Timber dams, Earth dams and rock fill dams; Physical factors governing selection of type of dam and selection of site for a dam.

UNIT-VI:

Spillways : Introduction; Types of spillways; Profile of ogee spillway; Energy dissipation below spillways for relative positions of jump height curve and tail water curve; Stilling basins; Indian standards on criteria for design of hydraulic jump type stilling basins.

UNIT-VII:

Water Power Engineering : Introduction; Hydropower - Advantages & disadvantages; Estimation of hydro-power; Flow duration curve; Power duration curve; Load curve; Load factor; Capacity factor; Utilization factor; Diversity factor; Load duration curve; Firm Power; Secondary power; Types ofNhydel schemes; Forebay; Intake structures; Penstocks; Surge tank; Tail race; Turbines; Selection of suitable type of turbine.

References/Text Books:

1. Dr. B.C. Punmia& Dr. Pande B.B. Lal, "Irrigation and water power Engineering", Laxmi Publications Pvt. Ltd., New Delhi, 12th ed., Laxmi Publication, 1992.

2. S. K. Garg, "Irrigation Engineering and Hydraulic Structures", 23rd ed., Khanna Publishers, Delhi, 2009.

3. Dr. P.N. Modi, "Irrigation, Water Resources & Water Power Engineering", 7th ed., Standard Book House, New Delhi, 2008.

4. K. Subramanya, "Engineering Hydrology", 3rd ed., Tata McGraw Hill, New Delhi, 2010.