

K L UNIVERSITY
WATER RESOURCES ENGINEERING (11-CE304)

Pre – requisite: 11-ES202, 11-CE205

Competency:

L	T	P	Cr
3	1	0	4

1. Understand water resources phenomenon, water movement and distribution in atmosphere, earth's surface and groundwater and how they relate to each other. Conceptualize the precipitation in various forms and measurement, mapping the rainfall data, verification authenticity and corrections.
2. Influence of interception, infiltration and evaporation, Analyze runoff effects, computation and design.
3. Utilization of concept of hydrograph and its application for determining the runoff and estimation of flood.
4. Understand the availability of groundwater in various geological formation layers and estimation, development, testing and extraction of groundwater.
5. Necessity of storage, investigation, calculation of reservoir capacities, flood routing, sedimentation problems and their life. Classification, comparison of various dams, selection, analysis, design and stability verification

Syllabus

Hydrology: Hydrologic cycle – Rainfall measurement and estimation. -- evaporation ,infiltration Hydrographs- Unit hydrograph, Method of construction of unit hydrograph for different duration. Method of super position, S-hydrograph. **Ground Water Hydrology** Types of aquifers Aquifer, Specific yield; Specific retention; Darcy's Law, Well hydraulics; Steady radial flow to a well–Dupuit's theory for confined and unconfined aquifers; Tube wells; Open wells; Yield of an open well–Constant level pumping test, Recuperation test. **Irrigation:** Duty, delta, Estimation of evapo-transpiration -- crop water requirements **Irrigation Channels:** design of lined and unlined canals --Silt theories–Kennedy's theory, Lacey's regime theory.

Reservoir and channel routing **Dams:** Designs of gravity dams and earthen dams. Classification of spillways.

TEXT BOOK:

1. Irrigation Engineering and Hydraulic Structure by S. K. Garg; Khanna Publishers, Delhi.
2. Asawa G.L. (2005) Irrigation and Water Resources Engineering New Age International Ltd.

Reference Books

1. Engineering hydrology by K.Subramanyam, Tata McGraw Hill ,New Delhi.
2. R.K.Linsley and J.L.H.Paulhus "Water Resources Engineering by McGraw-Hill Book Company
3. Irrigation Water Resources and Water Power Engineering by, Dr. P.N. Modi, Standard book house, New Delhi.
4. Applied Hydrology by Ven Te Chow, McGraw-Hill Book Company.