

Year & Sem: E2S1	Course Code: CE2103	Course Name: Water Resources Engineering	No. of Credits: 4	L 2	T&PS 2	P 0
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UNIT – I: Hydrology

Hydrological cycle, precipitation and its measurement, recording and non-recording rain gauges, estimating missing rainfall data, rain gauge net works, mean depth of over a drainage area, mass rainfall curves, intensity-duration curves, depth-area duration curves. Infiltration and infiltration indices, evaporation stream gauging, run off and its estimation.

UNIT – II: Hydrograph Analysis

hydrograph analysis, components, peaks flows, unit hydrograph and its derivation from isolated and complex storms, S-curve hydrograph, synthetic unit hydrograph, IUH

UNIT – III: Floods

Types of floods and their estimation by different methods, probability and frequency analysis, flood routing through reservoirs and channels, flood control measures, economics of flood control

UNIT – IV: Ground Water

Occurrence, confined and unconfined aquifers, aquifer properties, hydraulics of wells under steady flow conditions. Groundwater quality, Ground water recharge-necessity and methods of improving ground water storage. Darcy's law and its limitations. Formulation of governing equations for groundwater movement. Hydraulics of flow towards wells.

UNIT - V

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

UNIT – VI: Water Logging- Theory of subsurface drainage. Seawater intrusion and its control, approximate solution. Water logging-causes, effects and its prevention. Salt efflorescence causes and effects

References/Text Books:

1. R.K. Linsley and J.L.H. Paulhus: Water Resources Engineering, McGraw Hill Book Co., 1992
2. V.P. Singh, *Elementary Hydrology*, Prentice Hall, 1993
3. K.Subramanya, *Engineering Hydrology*, Tata McGraw Hill Publication co. Ltd. New Delhi, 1992
4. P.N. Modi, *Irrigation water Resources and Water Power Engineering*, Standard Book House, New Delhi, 1990
5. K.C. Patra, "Hydrology Water Resources Engineering

Lecture Plan: Unit-I & -II syllabus for MID-I, Unit-III & -IV syllabus for MID-II and Unit-V & -VI syllabus for MID-III examinations.

Video Lectures (Web Links):

1. <http://nptel.ac.in/courses/105104103/>