SEMESTER 6

Course Code	Course Name	Course Type	Cd	L	T	P	Marks		
							Sessional	Final Exam	Total
CE-601	Hydrology & Irrigation Engineering	PCC	4	3	1	0	50	100	150

Course Outcomes:

At the end of the course the students will be able to	
CO1	Determine hydro-meteorological and precipitation intensity.
CO2	Describe various techniques to calculate losses.
CO3	Describe Runoff and Draw hydrograph
CO4	Draw channel flood routing and flood plain mapping
CO5	Design Irrigation channels

Detailed Syllabus

Section-A

Unit 1: Precipitation**:** Hydrologic cycle, forms of precipitation, type of precipitation, measurement of precipitation, recording and non-recording gauges, gauge network, adjustments of precipitation data, and average depth of precipitation over an area - arithmetic mean, polygon and isohyetal method, hyetograph, mass curve, depth area duration curves.

(11 Hrs)

Unit 2: Water Losses: Evaporation, transpiration and infiltration. Empirical relationships, analytical method, reservoir evaporation and methods of its control, transpiration, evapotranspiration and its measurement, Penman's equation and potential evapotranspiration. Infiltration process, initial loss, infiltration capacity and measurement of infiltration, infiltration indices.

(11 Hrs)

Unit 3: Runoff: Factors affecting runoff, empirical formulae -runoff, hydrograph, components of hydrograph, separation of base flow, hydrograph for isolated storm and complex storm, unit hydrograph, derivation of unit hydrograph, unit hydrograph for different duration, S- hydrograph. **(10 Hrs)**

Section-B

Unit 4: Floods and Flood Routing: Flood frequency studies, recurrence interval, Gumbel's Method, flood routing, reservoir flood routing, channel flood routing and flood plain mapping. **(10 Hrs)**

Unit 5: Development of Irrigation in India: Necessity, benefits and ill effects of irrigation, systems of irrigation, methods of distribution of water, water requirement of crops, canal section, design procedure for irrigation channels, stable channel design, water logging and its control, canal lining. Khosla's theory and Bligh's creep theory. **(10 Hrs)**

Text Books

S. No.	Name of the Books	Author	Publisher	Edition (Pub. Yr.)
1	Engineering Hydrology	K Subramanya	Mc-Graw Hill	8th (2019)
2	Irrigation Engineering	G L Asawa	Wiley Eastern	6th (2018)

Reference Books

S. No.	Name of the Books	Author	Publisher	Edition (Pub. Yr.)
1	Applied Hydrology	K N Muthreja	Tata Mc-Graw Hill	15th (2020)
2	Irrigation	J. D Zimmerman	John Wiley & Sons	10th (2020)