

Panipat Institute of Engineering and Technology

Department of Civil Engineering

For Lectures in B. Tech. Civil Engineering Fifth Semester

Course No.	Title of the Course	Course Structure	
CE-305A	Hydrology	L-T-P	3-0-0
COURSE OUTCOMES (CO)			
CO1	Students will be able to get better knowledge about the total precipitation in the particular area using different rain gauges		
CO2	Students will be able to measure the evaporation, transpiration and infiltration and can analyze the measured data.		
CO3	Students will be able to calculate the total runoff and able to draw hydrographs for the different durations of rainfall and can predict the future runoff.		
CO4	Students will be able to get the knowledge of ground water, its quality and efficiency of the ground storage.		
Unit No	Topics To Be Covered	Lecture Nos	
1	Hydrologic cycle, scope and application of hydrology to engineering problems	1	
	Drainage basins and its characteristics	2	
	Stream geometry, hypsometric curves	3	
	Precipitation: Forms and types of precipitation, characteristics of precipitation in India	4	
	Measurement of precipitation, recording and non recording raingages	5	
	Raingage station, raingage network, estimation of missing data	6	
	Presentation of rainfall data, mean precipitation, depth -area -duration relationship	7	
	Frequency of point rainfall, intensity -duration- frequency curves, probable max. precipitation	8	
2	Evaporation & Transpiration: Process, evaporimeters and empirical relationships, analytical method	9	
	Reservoir evaporation and methods of its control	10	
	Transpiration, evapotranspiration and its measurement, Penman's equation and potential evapotranspiration	11-12	
	Infiltration: Infiltration process, initial loss	13	
	Infiltration capacity and measurement of infiltration	14-15	
	Infiltration indices.	16	
3	Runoff: Factor affecting run-off, estimation of runoff	17	
	Rainfall-run off relationships, measurement of stage-staff gauge, wire gauge, automatic stage recorder and stage hydrograph	18-19	

	Measurement of velocity-current meters, floats, area velocity method, moving boat and slope area method, electromagnetic, ultra-sonic and dilution methods of stream flow measurement	20-21
	Stage discharge relationship.	22
	Hydrograph: Discharge hydrograph, components and factors affecting shape of hydrograph	23
	Effective rainfall, unit hydrograph and its derivation	24-25
	Unit hydrograph of different durations	26
	Use and limitations of UH, triangular UH, Snyder's synthetic UH, floods	27-28
	Rational methods, empirical formulae, UH method, flood frequency methods	29-30
	Gumbel's method, graphical method, design flood	31
	Flood frequency studies, recurrence interval, Gumbel's Method, flood routing, reservoir flood routing, channel flood routing and flood Plain mapping.	32
4	Ground Water: Occurrence, types of aquifers, compressibility of aquifers	33-34
	Water table and its effects on fluctuations , wells and springs	35
	Movement of ground water, Darcy's law, permeability and its determination	36-37
	Porosity, specific yield and specific retention	38
	Storage coefficient, transmissibility	39
	Ground Water Quality: Indian and International standards, pollution of ground water and possible source, remedial and preventive measures.	40-41

Sr. No.	Course Coordination Committee	Name	Contact No	E-Mail Id
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