III Year-II Semester
(20CE6645) Applied Hydrology

Int. Marks	Ext. Marks	Total Marks	L	T	P	C
30	70	100	3	-	-	3

Pre- Requisites: Fundamentals of Fluid Mechanics

UNIT-I:
Introduction: Hydrologic system and hydrologic budget, fundamental laws of hydrology; atmospheric water vapour. Hydrologic Inputs: Precipitation and its forms, snowfall and rainfall; measurement techniques and space-time characteristics

UNIT-II:
Hydrologic Abstractions: Infiltration – indices, Hortons, Phillips, Green-Ampt methods, depression storage, evaporation, evapotranspiration; measurement techniques and estimation, space time characteristics and their modelling.

UNIT-III:
Stream flow: Measurement techniques, space-time characteristics, rating curves System Approach: Unit Hydrograph, distribution hydrographs, IUH - Clark and Nash models

UNIT-IV:
Mathematical Modelling: Linear and Nonlinear models, Physically based models, Hydrological routing – Channel routing – Muskingum, Reservoir routing – Pulse and Goodrich methods

UNIT-V:
Flood forecasting, Advanced Method of Frequency Analysis Outliers, Time series analysis – Auto regressive and moving average methods, Extreme value distribution methods

Course Outcomes:

S.No	Course Outcomes	BTL
1	Develop basic tools for analysis of hydrologic processes	L5
2	Apply time series models for hydrologic data generation and forecasting	L3
3	Knowledge about the hydrologic design concepts and method including estimation of the design flows	L2
4	Assess impact of mathematical modeling, Hydrological routing and Reservoir routing	L4
5	Discuss about the flood forecasting, Auto regressive and moving average methods, Extreme value distribution methods	L3

Reference Books:

1. Chow, V.T., Maidment, D.R. and Mays, W.L., "Applied Hydrology", McGraw Hill. 1988
2. Model Curriculum of Engineering & Technology PG Courses [Volume -II] [80]
3. Ojha, C.S.P., Berndtsson, R. and Bhunya, P., "Engineering Hydrology", Oxford University Press. 2008
4. Wanielista, M., Kersten, R. and Eaglin, R., "Hydrology", John Wiley. 1997
5. Water Resources Systems by S Vedula and P PMujumdar
6. Vijay.P Singh Hand Book of Hydrology