| III Year - II Semester | L | T | P | C |
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## APPLIED HYDROLOGY

**Course Outcomes:** At the end of the course, the student will be able to

- Develop basic tools for analysis of hydrologic processes
- Apply time series models for hydrologic data generation and forecasting
- Knowledge about the hydrologic design concepts and method including estimation of the design flows
- Assess impact of mathematical modeling, Hydrological routing and Reservoir routing
- Discuss about the flood forecasting, Auto regressive and moving average methods, Extreme value distribution methods

### SYLLABUS

**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, evapo transpiration; 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

### REFERENCES


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