

GUJARAT TECHNOLOGICAL UNIVERSITY
PDDC - CIVIL ENGINEERING
Semester: III

Subject Name: **Hydrology and Water Resources Engineering**

Sr. No.	Course content
1.	Introduction: The hydrologic cycle, history of hydrology, scope and application of hydrology, importance of water resources.
2.	Precipitation: Types of precipitation, geographical distribution, time distribution, variability, measurement, average depth over area, depth area duration.
3.	Evaporation and Transpiration: Factor affecting, measurement, evaporation in reservoirs, methods of prevention.
4.	Infiltration: Introduction, factor affecting, measurement.
5.	Runoff: Runoff process; relation of storm period and rainfall, factors affecting runoff methods of computation; gauging runoff of stream; stage discharge relationships interpretation of stream flow records.
6.	Hydrograph Analysis: Components of the hydrograph; Separation of base flow, components unit hydrographs, S-hydrographs.
7.	Floods: Causes of floods, methods of estimation of floods. Design floods, damages, flood routing through reservoirs, methods of flood control, flood forecasting and warning.
8.	Groundwater Hydrology: Occurrence and movement of groundwater, surface and subsurface investigation of groundwater, flow through saturated porous medium.
9.	Simulation Modelling: Introduction, types, application in hydrology and water resources engineering.

Term Work:

Term work shall be based on the above mentioned course content.

Field Visit:

Field visits based on course content are suggested.

Reference Books:

1. Hydrology and Water Resources Engineering by S. K. Garg.
2. Watershed Hydrology by Peter E. Black.
3. Engineering Hydrology - K. Subramanyam.
4. Hydrology by H. M. Raghunath.
5. Hydrology and Water Resources Engineering by James & Lee.