GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Semester: 1

Water Resources Management

Subject Name Hydrology And Watershed Management

Sr.No	Course content
1	Engineering Hydrology Hydrological cycle, precipitation, forms, measurement, distribution, storm pattern and analysis, Catchment characteristics for producing run-off, infiltration, rainfall-runoff relation etc, Hydrograph analysis, transportation of streams, stream gauging, measurement of stage, discharge, relationship, most probable flood standard project flood, Synthetic hydrograph, Flood routing
2	Watershed Management Watershed, Small Watershed, Characteristics of Watersheds-Size, Elevation & Slope, Aspect & Orientation, Watershed shape, Drainage Network; Watershed Equilibrium, Watershed improvement, method for reducing flood peaks, Soil conservation, Afforestation, channel improvement, detention basins, Water Harvesting.
3	Stochastic Hydrology: Probability, Distribution of random variation, probability fitting, correlation and regression analysis, stochastic process, Time series analysis, Synthetic flow generation model
4	Catchments models Stochastic and deterministic models, Conceptual and Emperical models, Dynamic and Numerical models, Single Event Rainfall-Runoff Models, Continuous Simulation Models, Model Calibration & Validation

List of Experiments:

1. Use of automatic weather station
2. Measurement & Study of Rainfall
3. Measurement & Study of Temperature
4. Measurement & Study of Wind Velocity
5. Measurement & Study of Moisture Content

Reference Books:

1. Hydrology & Soil Conservation Engineering – Ghansyamdas
2. Stochastic Water Resources Technology – N.T. Kottegoda
3. Applied Hydrology – Mutreja
4. Engineering Hydrology – K. Subramanya
5. Hydrology – Raghunath
6. Engineering Hydrology – J. Rami Reddy
7. Stochastic Hydrology – J. Rami Reddy
8. Applied Hydrology – Maidment & V. T. Chow
9. Introduction to Hydrology – Warren Viessman, Jr. & Garry L. Lewis, Pearson Education
10. Watershed Hydrology – Peter E. Black, Prentice Hall.