

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Semester: 2

Water Resources Management

Subject Name Stochastic Models in Water Resources

Sr.No	Course content
1	Concept of Probability, Distribution Function, Parameter Estimation, Method of Moments.
2	Maximum Likelihood, Least square, Probability Distribution, Structure of hydrological time series, trend and seasonality
3	Auto covariance and correlation function, Spectral analysis, data generation techniques.
4	Linear stochastic models, AR models, MA models, ARMA models, Modelling of non-stationery time series, Seasonal series, Thomas-Fiering Model, ARIMA Models, Periodic Models, Multi-Site Modelling

List of Tutorials

1. Problem based on mean model
2. Mediation and standard deviation
3. Probability distribution
4. Auto covariance and correlation function
5. Spectral analysis
6. Problem on data generation techniques

Reference Books

1. Jayarami Reddy P., Stochastic Hydrology, Laxmi Publication, 2003.
2. Hippel K.W., McLeod A.I., Panu U.S., Singh V.P., Fang L., Stochastic and Statistical Methods in Hydrology and Environmental Engineering, Springer, 1994.
3. Marco J.B., Harboe R., and Salas J.D., Stochastic Hydrology and Its Use in Water Resources Systems Simulation and Optimization, NATO Advanced Study Institute, Peniscola, Spain, September 18-29, 1989.
4. McCuen, R.H. and Snyder, W.M., Hydrological Modeling - Statistical Methods and applications, Prentice Hall, 1998