Istanbul Technical University

Department of Civil Engineering

Hydraulics and Water Resources Engineering Graduate Program

Stochastic Modelling Techniques in Hydrology

Spring Semester

Assignment-1

Obtain a certain time series data and answer the following questions.

1. Check if $\sum(x_i - \bar{x}) = 0$ or $\frac{1}{n}\sum(x_i - \bar{x}) = 0$, where $\bar{x}$ is the mean value.
2. Calculate the mean value, variance, standard deviation, coefficient of variation, skewness-coefficient, mode, median, autocovariance and autocorrelation coefficients.
3. Check the stationarity of the data by dividing the time series into different expectation groups such as 20, 15, 10 and 5 intervals.
4. Please explain if it constitutes a stochastic process or not, considering 12 lags.