CT303 **Digital Communication** **Autumn, 2018**

Lab. 2 **Study of WSS Random Process (using MATLAB commands)**

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1. For the random process given by the following expression $X(t) = A \cdot cos(2\pi 10t + \theta)$, where θ is a random variable uniformly distributed between 0 and 2π, generate sample functions (1000) (waveforms) representing the process.

   Check whether the process is wide sense stationary (WSS). Note that (ensemble) mean should be constant and autocorrelation should be a function of time difference only. Plot autocorrelation function and power spectral density (PSD) for the same and verify the properties of autocorrelation function and PSD.

2. Generate normal (Gaussian) random process and plot the probability density function (PDF) of random variable for different instances. Find out whether the process is wide sense stationary (WSS) (Need to repeat what is done in 1 to check for WSS). Plot the autocorrelation function and PSD.