ELEC365 Fundamentals of Digital Communications

MATLAB Project   Spring 2022

Submit the project at the beginning of the first lecture on May 20, 2022. No late project is accepted. No online and e-mail submission. Project is supposed to be your individual work, cheating will not be tolerated.

In a baseband communication system, $s_1(t) = \begin{cases} A.Sin\left(\frac{2\pi t}{T}\right), & 0 \leq t \leq T/2 \\ 0, & Else \end{cases}$ and $s_2(t) = s_1(t - T/2)$ are transmitted for the bits "1" and "0", respectively. Find the bit error rate (BER) expression of this system over additive white Gaussian channel (AWGN) for P(1)=1/3, P(0)=2/3 and plot it. Do the simulation of the system to obtain BER curve versus SNR. Compare and comment on the theoretical and simulated BER curves.

Project must contain analytical derivations, MATLAB code with explanations, BER plots and your comments on them.