ECE/EEE F311 Communication Systems (First Semester 2023-2024)
Lab-11 (Tuesday) (21-11-2023)

Objectives

In this task, the objective is to understand QPSK SER and Channel capacity.

Task 1

Simulate the SER for QPSK constellation at $E_b/N_0 = 0$ dB, $E_b/N_0 = 3$ dB, and $E_b/N_0 = 10$ dB. Verify the result with theoretical derivation using qfunc.

Task 2

Plot the channel capacity C_s (in bits/symbol) versus P_e for a binary channel. The formula for C_s is given as: $C_s = 1 - [P_e \log_2 \frac{1}{P_e} + (1 - P_e) \log_2(\frac{1}{1-P_e})]$.