## ABSTRACT

In this modern era, everything has gone through the excellence of technology by knowing the digital communication system. In digital communication systems must have a system block, the system block is a system block that occurs because the process of data transmission in a digital communication system. Digital communication system blocks consist of source of information block, channel block, and transmitter or receiver block. The coding technique is one of the materials used for the sequence of information to be segmented into fixed long blocks. Linear Block Code Simulator for instructional media in Communication System can support the learning process, although it's not available yet.

In this Final Project has been designed a simulator to help learning the Linear Block Code encoding technique. This coding technique uses three LBC methods which each have different n-bit and k-bit values by passing through the ideal channel, AWGN, and Rayleigh. The developed simulator can then perform the encoding and decoding process, as well as the output to be measured in the form of BER and SNR.

In this Final Project, to facilitate analysis, BPSK and QPSK modulation is selected in simulation, but this technique can still be developed for higher modulation. The results of this study indicate that the performance of BER theory and simulation have similar values that indicate the validity of the simulation. BER performance on LBC (8.5) is better than LBC (7.4) and LBC (6,3) due to more redundancy is added, the error correction capability is strengthened, but the coding rate drops. The test results of LBC encoding technique by comparing GUI and manual calculation results obtained in accordance with the theory. *Keywords* : Linear Block Code, AWGN, Rayleigh, Channel Block, Information Theory, Hamming Code.