1125-12-2181 **José William Velázquez*** (jose.velazquez16@upr.edu), hc 45 Box 9810 Road 730, Cayey, Puerto Rico, cayey, PR 00736. *2 error binary correcting codes through nonlinear algebra.*

The fundamental problem in communication is the fact that as we increase the amount of information we want to send trough a channel the risk of the information being altered increases. The purpose of error correcting codes is to recover the information that was lost in the channel.Linear codes in general can be defined by a n-k x n parity check matrix "H" where n is the block length of the codewords and k is the rank of the codes generator matrix. We study the application of nonlinear functions (focusing on the Gold and Kasami sequences) on the parity check matrix so that we can increase the minimum distance of a code and hence its error correcting capacity. In general, nonlinear functions defined over finite fields have very important applications in error correcting codes. The Gold and Kasami functions are related to 2-error correcting codes of lengh $2^(s) - 1$ as studied by Van Lint, Wilson, Janwa and others. We use only the properties of the Gold and Kasami functions and their domains, as well as, multivariate polynomials related to these functions in order to determine parameters that help us identify 2 error correcting codes. (Received September 19, 2016)