ECE 729
Design Project #2

Download MATLAB from course web page. Run PC.m, look at its output & figure out how it works. What it does:

1) You specify binary codewords as ordinary integers. For example to specify $\underline{x}_2 = 00111$, write the MATLAB command $x(2) = 7$.

2) You select decoding sets. For example if $D_1 = \{00000, 00001, 00010, 00100, 01000, 10000\}$ use the MATLAB commands

$D\{1\}(1) = 0$; or bin2dec('00000')

$D\{1\}(2) = 1$;   (D is a _cell_ array)

$D\{1\}(6) = 16$; or bin2dec('10000')

In PC.m, $D\{1\}$, $D\{2\}$, & $D\{3\}$ are each vectors, but they can have different lengths.

3) $P_e = 1 - P_c = 1 - \frac{1}{N}\sum_{i=1}^{N} W^n(D_i \mid \underline{x}_i)$,   Uses fcn $W.m$ $W(n, x, y)$

where $D_i = \{\underline{y} : \varphi(\underline{y}) = i\}$, $i = 1, \ldots, N$.

MODIFY PC.m to handle $n = 7$ bit words & $N = 4$ codewords. Choose NEW D_i sets to min. the prob. of error.