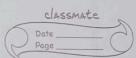
## Mod 3 (ITC): LBC



<b>→</b>	Bosics  Def : (P = Ci + Cx [Sum of any two (W gives CW])  Property : (D All O is also (W
	@ (P = (i + (k then d ((i, (jk) = W ((P))  3) dmin = Wmin
0	(make table with k data & n total
	2) Adjust the extra   parity bits for odd leven parity
	3) Take any two (& XOR  if new (is present in matrix table  then check dmin (C,C) = W (new C) -> LBC  else if new (is not present -> Not LBC
$\rightarrow$	Generator matrix to generate (W in LBC  [C] = [i] [G]  (W infor Generator Words Matrix
	GM of (n,k) linear code has k rows & n columns  [G] = [I:P]
0	Q & i given just multiply to get a one row CW Σ(i full row x G full column) -> Given 1 bit
Q	If only (n,k) & G given in Q  k = message bits -> create table mo m, m2  Take one row & perform like last Q & similarly  repeat for all combos of i  repeate a new table of G.  Greate a new table of G.
Series Control	

*	Systematic Generator matrix
	[G] = [I : P]  kxn kxk kx(n-k)  Basically nothing  but bitted to form
	kxn kxk kx(n-k) but birting to form
	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
	Pi = 11 + 12 + 13 Po = 10 + 12 identity
	P2 = i2 Di3 Dih P= 1/Di2 & multiply i/ to get
	B3 = 11 A 12 A 14 / 92 = 10 A 1
	A smolled (shist)
->	Parity Check Matrix
	$[G]' = [I_k : P]$
	Parity Matrix
	Side xately the training of Smith 25
	[H] = [PT: In-K]
	Parity check Transpose of Parity motrix
	matrix
	and the hist alors and the second sec
$\rightarrow$	IBC Error Detection & correction
	Detection 1 Correction
	dmin 7, 5+1   dmin >, 2++1
	error detection capacity error consection capacity
	To the Property of the Propert
*	From Syndromes & Error correction  [Y]   received cw steps
	Syndrome: O Multiply received (W& HT
7	[S] = [Y] [HT] @ Get new sequence -> Find that
	Corrected CW: sequence oppears in which row
	[Y]=[c] + [F] of H <sup>T</sup> (1,2,3)
	3 XOR a new sequence with all 0's
	except 1 at error row no,
Trit.	with received (W(Y).
	The same of the sa

<b>→</b>	LBC Complete Example
	Given (n,k) & a
	@ Corresponding code vectors?
	G = [I : P]
	[c] = [i][a]
	[Po] = [im] [P]
	[P. P. P2] = [i. i. i2] [P]
	Here, Po = 10 12
	P1 = 1, 1 12
	β <sub>2</sub> = i ⊕ i ε
	(reate Table i. i, iz P. P. P.
	The state of the s
	C2
	Cz
	Cg
2	6 Minimum Hamming distance dmin? -> min weight from C's
	@ Error detection & correction?
J.,	dmin 7/5+1 dmin 7/2++1
	1 Parity Check Matrix [H]?
	H = [P] : In-k
	@ Frror if received code is ()
1300	S = [Y][HT]
	Y = C + e or [X] = [Y] + [e]