20SK – Signals and Codes

Lecture 10 –Binary cyclic codes

Topics discussed:

- Repetition: Basis of a linear code, generator matrix
- Code-word as a polynomial, cyclic shift
- Generator polynomial, encoding binary cyclic code
- Parity check polynomial, decoding a binary cyclic code
- Shortened cyclic codes, CRC codes

The relevant literature is [1, chapter 3], [2, chapters 10 and 12] and [3, chapter 4].

Resources

[1]   Morelos-Zaragoza, R. H.: *The Art of Error-Correcting Coding*. 2nd edition, John Wiley & Sons, 2006, 263pp.

[2]   Adámek, J: *Foundations of Coding: Theory and Applications of Error-Correcting Codes with an Introduction to Cryptography and Information Theory*. Wiley Interscience, 1991, 352 pp.

[3]   Moon, T. K.: *Error Correction Coding – Mathematical Methods and Algorithms.* Wiley Interscience, 2005, 756 pp.