

# 20SK – Signals and Codes

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## Lecture 12x – Error correcting codes (2015/12/18)

Topics discussed:

- Hamming code: examples, construction of the code from parity-check matrix, direct construction of generator matrix.
- Syndrome decoding of Hamming code.
- Binary cyclic codes: properties, generator and parity-check polynomial.

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.