

# 20SK – Signals and Codes

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## Lecture 14 – Error correcting codes (2015/12/11)

Topics discussed:

- Principles of (forward) error correction
- Information rate, minimum code distance, detection and correction capabilities
- Binary arithmetic modulo 2
- Linear codes: definition, basis vector, computation. General properties. Generator and parity-check matrix.
- Systematic code.

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.