List of topics for exam on Coding Technology

Model of Binary Symmetric Channels, performance measures for error correcting codes (Singleton bound, Hamming bound)

The generic coding scheme

Linear binary codes (generator matrix, parity check matrix, syndrome decoding)

Hamming codes

Reed Solomon codes (generator matrix, parity check matrix)

Cyclic codes and operations with shift registers

The error trapping algorithm

Algebra of over GF(2^m), operations by shift registers

Cyclic Reed Solomon codes over GF(2^m)

Fundamentals of data compression (Kraft inequality, entropy, source coding theorem)

Shannon-Fano and Huffman coding

Distribution free data compression (adaptive Huffman coding, LZ77, LZ78 algorithms)

Foundations of cryptography (the basic scheme, type of attacks, OTP algorithm)

The basic scheme of public key cryptography, the RSA algorithm