

TSKS02 Telecommunication

Lecture Plan Autumn 2018

Please observe that the following schedule should be interpreted as an indication about approximately when different topics are treated.

Nr	Material	Main topic	Part
1	Ch 1-2 Ch 3.1-3.3	Introduction Linear filters	Course plan, applications, prerequisites. Time domain analysis of LTI-systems, definitions, convolution.
2	Ch 3.4-3.7	Linear filters	Frequency domain analysis of LTI-systems, Fourier transforms, LP-, HP-, BP-, and BS-filters.
3	Ch 4	Channel models	Thermal noise, cables, radio channels, optical channels.
4	Ch 5.1	Analog comm.	Amplitude modulation.
5	Ch 5.2	Analog comm.	Frequency modulation. Phase modulation.
6	Ch 6	Sampling & quantization	Sampling, quantization, reconstruction, pulse modulation.
7	Ch 7.1-7.3	Digital comm.	Digital modulation techniques, vector representation, receivers, impact of noise.
8	Ch 7.4-7.6	Digital comm.	Different modulations: OOK, ASK, PSK, FSK, QAM. Nearest-neighbour approximation of symbol error probability and bit error probability for signals disturbed by white gaussian noise.
9	Ch 8.1-8.3	Channel coding	Error correcting codes, dimension, redundancy, rate. Linear codes, repetition codes.
10	Ch 8.3-8.6	Channel coding	Hamming codes, Product codes, CRC codes. Cyclic codes.
11	Ch 9	Source coding	Sources without memory - sources with memory, Markov sources. Tree codes, Kraft's inequality, Huffman codes, run-length coding.

It is highly recommended that you read the listed course material before each lecture and prepare questions. If not, the lecture may not be as useful to you as it otherwise could be.