TI-ADWI – Exam 2019

Exam:

- Examination in English
- Individual oral examination (20 min) with no preparation
    - The student is expected to make a presentation (maximum 10 min) using only whiteboard and pen
    - The remaining time is reserved for Examiners' questions and grading.
- Only aids allowed: prepared (short) presentation outline. Formulas and figures are **not** allowed in this outline. The student is **not** allowed to bring syllabus material and notes into the exam room.
- Grade: 7-scale , external examiner

Exam questions

1. Explain the statistical modeling of the narrowband and wideband radio channels. Relate this to the Matlab exercise you have made.

2. Explain the performance of a digitally modulated/demodulated wireless signal in AWGN channel vs fading channel (focus on Doppler and ISI).

3. Explain different ways of dealing with ISI, specifically go into the techniques of Equalization. Relate this to the Matlab exercise you have made.

4. Explain advanced coding techniques: convolution coding / Viterbi decoding and the maximum likelihood principle. Relate this to the Matlab exercise you have made.

5. Explain concatenated codes, Turbo codes and LDPC. Include information like coding principle and discuss performance.

6. Explain adaptive modulation/coding and power principles.

7. Explain multicarrier techniques and discuss OFDM design/implementation details.

8. Explain the principles of the different radio architectures and the RF building blocks involved. Explain the impact on system performance caused by nonlinear behaviour of these RF building blocks. Relate this to the Matlab exercise you have made.