Example questions on Lecture 2 (Wiener Filter):

1) Which optimization criterion is used to derive the Wiener Filter?

2) What is the principle of orthogonality?

3) How can the optimal filter coefficients of the Wiener Filter be calculated based on an input signal x(n) and an output signal y(n) of an unknown system which should be identified?

4) Which kind of pdf (probability density function) do PN sequences show?

5) What are the autocorrelation properties of a PN sequence? What is the major difference compared to white noise?

6) For the identification of an unknown impulse response: What has to be considered for the choice of the periodicity length of the PN sequence?

7) How can the Wiener Filter by noted in the frequency domain based on an input signal x(n) and an output signal y(n)? How does it look like for uncorrelated input (target) and noise signals?

8) Which modifications of the "theoretical" Wiener Filter solution are applied for the noise reduction application? – Why?

9) The Wiener Filter has been derived for stationary signals. Why can it then be applied for noise reduction of highly instationary signals such as speech?

10) Which properties should the interfering noise show in order to be able to reduce this noise by the Wiener Filter scheme we learned in the lecture?