Assignment 6

1. Generate a signal (as a mixture of sines 10 Hz and 20 Hz and Gaussian noise) for sampling rate fs = 100 Hz. Apply low-pass FIR and IIR filters with cutoff frequency fc = 15 Hz, plot the original (noisy) and filtered signals, their amplitude spectrums and frequency responses.

2. Generate a signal (as a mixture of sines 10 Hz and 20 Hz and Gaussian noise) for sampling rate fs = 100 Hz. Apply (1) band-pass FIR filter and (2) combination of low-pass + high-pass FIR filters with cutoff frequencies [5, 25 Hz], plot the original (noisy) and filtered signals and their amplitude spectrums.

3. Select any filtering related approach that is interesting for you or relevant to your work, provide a brief description and a short code example.

4. Write a report about the tasks (5 pages max) including figures.

Save the report to a file (A06_your_surname.pdf) and upload it together with your Python script (A06_your_surname.py) to the assignment webpage. The *.pdf and *.py files can be zipped and uploaded as a single zip file (A06_your_surname.zip).