1. Load the data in the file ‘mouseLFP.pkl’. The file contains the data from extracellular recordings from mouse auditory cortex while the mouse was listening to 2 sounds with different frequencies, each repeated 100 times and presented in random order. Each stimulus was presented for 50 ms, with 500 ms interstimulus interval. Data was collected at 10kHz.
The data was organized as a numpy array of numpy arrays. The numpy array is 4-by-7 in size; the 4 rows are 4 different recording sessions, the 7 columns are as follows:

1) Voltage trace snippets per trial, time-locked to each stimulus onset. In each trial, stimulus onset is at 100 ms
2) Background noise per trial (before stimulus onset)
3) Raw voltage trace over the entire session (before cut up into data in 1st column)
4) Trace of triggers over the entire session (1 if tone was on, 0 off)
5) List of tones in order presented
6) Tone on- and off time over the entire session
7) Information about recording site, date etc

a. Calculate the power spectrum and spectrogram for the voltage trace in each session
b. In extracellular recordings, spikes contribute to signals > 1000 Hz range. Since we are only interested in LFP signal, filter out the spike information in the voltage traces.
c. Calculate average LFP response to each stimulus. This is generally referred to as event-related potentials, or ERPs.
d. Calculate the spectrogram of the ERPs.
e. Play around with different filter settings. How does this affect the ERPs calculated?