



Lab Lecture 6

Learning objectives

- ▶ Time-frequency transform: spectrogram and how to make one in Matlab

Time frequency analysis

- ▶ Read the documentation of **spectrogram** in Matlab (start with “help spectrogram” and follow up with the hyperlink at the end of the help)
- ▶ Use Matlab’s spectrogram function to make a time-frequency plot of your assigned signal
- ▶ **Tasks:** Study DSP/ SpecgrmQCDemo.m and the new version of SIGNALS/ testcrbngenqcsig.m (e.g., what are the differences between them?)
 1. Modify the test<funcname>.m script you have written earlier, where ‘funcname’ is the function that generates your assigned signal, to make a spectrogram
 2. Experiment with different signal durations, sampling frequencies, window sizes, overlaps etc., to get a reasonable looking spectrogram that matches your expectation of how it should look for your assigned signal (e.g., QC spectrogram shown here)
 3. Submit your test<funcname>.m code (and update your repository) along with a plot of the spectrogram

```
41 %Plot a spectrogram
42 %-----
43 winLen = 0.2;%sec
44 ovrlp = 0.1;%sec
45 %Convert to integer number of samples
46 winLenSmps = floor(winLen*samplFreq);
47 ovrlpSmps = floor(ovrlp*samplFreq);
48 [S,F,T]=spectrogram(sigVec,winLenSmps,ovrlpSmps,[],samplFreq);
49 figure;
50 imagesc(T,F,abs(S)); axis xy;
51 xlabel('Time (sec)');
52 ylabel('Frequency (Hz)');
```

