# ELECTRICAL AND ELECTRONICS ENGINEERING INSTITUTE

## EE 286: Digital Audio Signal Processing

Mini Problem 1: Digital Audio Synthesis

Objectives:

- Learn and apply methods for audio synthesis
- Write programs to synthesize music instrument sounds
- Use MATLAB to analyze and visualize sounds

Resources:

- Please read the lecture slides with sample MATLAB scripts in the MP1 submission bin in UVLE.

Things to do:

- Analyze the uploaded sound clips (piano, trumpet, snare) using spectrogram.
- Write programs to synthesize the sample audio clips.
- You only need to synthesize sounds at one particular pitch, e.g. 440 Hz.
- You are free to choose whatever synthesis technique for an instrument. Your goal is to approximate the natural sound.
- Save each synthesized sound as a WAV file

Questions:

1. How many synthesis techniques did you use? Is there an advantage in using one technique to synthesize a particular instrument?

2. How did you vary the loudness over time?

3. How can you make a synthesized sound more natural or closer to the real instrument?

This work can be done by pair. Together with your answers to the questions, submit the Matlab script (yoursurname1_yoursurname2_synthesis.m) and WAV files. Compress your files as a zip file then upload in UVLE. Please consult your instructor if you have any questions or clarifications.



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