1.   Our Approach

Electronic Circuit - The plan is to use Op-Amps, Capacitors, Resistors in a circuit in order to generate a square waveform. Here variable resistors will be used to change the frequency and the pulse width of this generates square waveform. Variable Voltage regulators will be used to change the amplitude of that square wave. Then another Op-Amp will be used as an integrator to generate a triangular waveform and the sawtooth waveform, using this already generated square waveform. Then another Op-Amp will be used to convert this triangular waveform to a sinusoidal waveform. This designed schematic circuit will be tested through Proteus Simulation software before starting the design process.

3D Design and Enclosure – The PCB will be designed using Altium. Then the dimensions of the designed PCB will be taken into account when designing a 3D Enclosure using the SolidWorks.

Testing – Due to the current condition, it might not be possible to access an oscilloscope. So, after the simulation we plan to make our own simple oscilloscope using already available components. (Arduino/ Raspberry Pi)

2.   Our Skills and Potentials

The team members have worked with electronic components since A/Ls. Everyone has a good understanding about the inner working of these components (Op-Amps, transistors and capacitors). There is a person in our team who is interested in sound mixing and he has prior experiences on working with waveforms. Everyone learned SolidWorks and Altium for the semester 2 project. So, there is enough skills and potential in designing the PCB and Enclosure. We have a good team spirit and have worked together before. So, everyone knows about others strengths and weaknesses.