*Title:* **ACOUSTICS MEASUREMENT: WEIGHTINGS**
*Ref Number:* **12**
*Location:* **NATIONAL COLLEGE ACOUSTIC LAB**
*Supervisor:* **SALIH HASSAN**
*Academic:* **SALIH HASSAN**
*Team Size:* **~4**
*Environment:* **ANEHOIC CHAMBER**

## OBJECTIVE

To develop an understanding how the decay of sound is affected by its environment.
To obtain a practical knowledge of the use of a Sound Level Meter

## APPARATUS

1. Reverberation Chamber
2. Anechoic Chamber
3. Sound Level Meter
4. Calibrator
5. Tripod
6. Loudspeaker
7. Random Noise Generator
8. Power amplifier

## THEORY

Sound is affected by its environment in the free field it should decay at a rate of 6 dB per doubling of distance. In a room the reflections add to the direct sound, and hence the decay rate decreases.

## PROCEDURE

**In the Reverberation Chamber**

1. Load the software module for the sound level meter and calibrator the sound level meter, as per the instructions on the side of the calibrator.
2. Connect the noise generator to the loudspeaker.
3. Place the sound level meter on a tripod 1m from the loudspeaker at a height of 1.2m
4. Measure the sound pressure levels (A,C and L “linear” weighted) at points every 0.5m from 1m to 4m from the loudspeaker.

**In the Anechoic Chamber**

5. Load the software module for the sound level meter and calibrator the sound level meter, as per the instructions on the side of the calibrator.
6. Connect the noise generator to the loudspeaker.
7. Place the sound level meter on a tripod 1m from the loudspeaker at a height of 1.2m
8. Measure the sound pressure levels (A,C and L “linear” weighted) at points every 0.5m from 1m to 4m from the loudspeaker.

If time allows, in the Anechoic Chamber only

1. Install a reflective surface behind the microphone
2. Move the microphone
    a) Away from the surface, say 2m
    b) Near the surface, say 0.5m

**RESULTS**

On graph paper or Excel plot the sound decay with increasing distance for the Reverberation and Anechoic measurements

**DISCUSSION**

1. Do not change the output level of the generator/amplifier during the experiment
2. Plot the Sound Pressure Level as a function of distance away from the sound source. Do you observe the exponential law of decay?
3. Compare the results in the anechoic chamber and the reverberation chamber by marking an additional graph with including both measurements
4. Compare the results for “A”, “C” and “L” weighting in each room.