

# Exploring Synthesizers

## **1. What happens to the sound of the synthesizer when you change the oscillators from sine, triangle, square, or sawtooth: hint (timbre)**

A sine wave gives a nice smooth pleasing sound. The triangle and square waves sound more aggressive. Finally, the sawtooth wave gives a grating sound. So this gives you the ability to change the feeling of the notes. You can use a sine wave to mimic a flute and a sawtooth wave to imitate an electric guitar.

## **2. Explore the sound envelope of the volume controls. What happens to the sounds when you adjust the attack, decay, sustain, and release?**

- Attack - the delay from the time when you press the note to when you hear it
- Decay - increasing the decay seems to cause the note to drop away in intensity - related to the level set by sustain. This reminds me of SFZ or Sforzando with my bass playing
- Sustain - the intensity or volume of the sound while you hold the key down
- Release - increasing the release value of the note to continue and then gradually diminish. You can make it sound like an airplane seat belt ping!

## **3. Explore the sound envelope for the Filter envelope. What happens to the sounds when you adjust the attack, decay, sustain, and release?**

- Attack - this doesn't slow down the start of the note like Volume Envelope Attack but, it creates a nice secondary effect
- Decay - increasing the decay value also changes feel of the note while you hold the key down - decreasing the tone's intensity
- Sustain - I couldn't hear any difference - maybe I was doing something wrong?
- Release - I'm sorry, I couldn't hear any difference - maybe something to do with the change in timbre of the note as it plays out? I found it hard to tell.

#### **4. What does cutoff control?**

When I put cutoff to 250 Hz, the sound was super quiet. At 8000 Hz, it sounded normal. At 15-18,000 it sounds more harsh for some reason. Is that more harmonic overtones?

#### **5. What does Vibrato and tremolo control?**

Vibrato causes the note to oscillate in pitch like an opera singer, whereas Tremolo makes the sound go up and down in volume/intensity rapidly.

#### **How are they similar and how are they different**

They both oscillate but, one is in pitch while the other is in volume!

#### **6. Can you figure out what high pass and low pass filters are?**

The high and low pass filters seem to be connected to the cutoff frequency?

I noticed that if I put the cutoff frequency in the middle, using the Low-pass filter lets low notes through but, makes the high notes more quiet. When I

put the High-pass filter on the high notes are loud again! The low notes play but, they diminish in volume quickly. It's kind of confusing.