

BTEC Level 3 National Extended Certificate in Music Technology (Digital Music Production)

Year 12 Transition Summer Task

Creative Sampling and Synthesis

Research the history and development of Synthesisers and Samplers. How do synthesisers work and how do the different components of a synthesiser create, shape and manipulate sound. What are the different types of synthesis? How can a sampler be used to capture, store, manipulate and playback sounds? What are the key functions of a sampler? Ensure you cover the following information:

Components of Common Synthesisers:

- Oscillators – types of oscillators and different waveforms (offering frequency, waveform and colourisation/timbre controls), phase and phase cancellation
- Filters (including high, low, band and notch pass filtering), filter envelopes (ADSR), filters with resonance
- Amplifiers - at various stages in the synthesis engine, amplifier envelope (ADSR)

Principles of subtractive synthesis and other types of synthesis:

- Common synthesis flow chart - from oscillator, through filter to amplifier and how low- frequency oscillator (LFO), filter envelope and amplifier envelope shape the sound, how filter resonance can be used
- Types of synthesis: additive, subtractive, frequency modulation (FM), wavetable, granular

Sampler considerations:

- Sample rates, bit depth, the effect of digital fidelity on audio quality, storage and usability, Nyquist theory etc

Common sampler functions:

- Trim, reverse, crossfade loop, normalising, slicing, zero-crossing, key mapping, layering, time stretching etc

Task 2: Using the link below, explore the Ableton Live Digital Playground and make notes on each section:

<https://learningsynths.ableton.com/>

Useful Links:

Types of synths YouTube: <https://www.youtube.com/watch?v=X4E-2qq5rE8>

ProAudio Files - <https://theproaudiofiles.com/the-fundamentals-of-subtractive-synthesis/>

Pro Audio Files – Sampling <https://theproaudiofiles.com/fundamentals-sampling-and-instruments-libraries/>

Subtractive – Roland - <https://www.roland.com/uk/blog/guide-to-subtractive-synthesis/>

<https://musictech.com/guides/essential-guide/beginners-guide-to-synthesis-in-music-production/>

Sound on Sound - any

Google!