



Name: \_\_\_\_\_

Class: \_\_\_\_\_

Teacher: \_\_\_\_\_

# PGS Music Technology Concept Guide

**National 3 – National 5**

*Includes all concepts in:  
Music Technology Skills / Contexts  
&  
Understanding 20<sup>th</sup> & 21<sup>st</sup> Century Music*

# Information

This concept guide is designed to be used in the following ways:

- A guide where all concepts are defined - *where possible with working demonstrations*
- A diary of where and when you were first introduced to the concepts
- A guide for completing coursework
- A revision tool for your assessments & exams during the course

As well as all the concepts you will be introduced to in **Music Technology** the concepts for **Understanding Music in 20 / 21<sup>st</sup> Century Context** are also included.

All the concepts in this guide will be required during the course for completing log entries, composing ideas and passing Unit and A.V.U. Exams. Having a good working knowledge of these concepts will also make using equipment you are not familiar with more accessible as most system work in similar ways.

This is a “**working book**” - *it is meant to be written on*. Making extra notes about some things will help you when learning about new concepts and revising. There are also 4 pages at the back of the booklet for you to add additional notes if required...

## Skills, knowledge and understanding

The concepts in this book will develop your skills, knowledge and understanding in the following areas:

- skills in using music technology hardware and software to capture and manipulate audio
- knowledge of music technology hardware
- knowledge of the features and functions of music technology software
- application of music technology in creative ways
- planning, implementation and evaluation of a sound production
- awareness of a range of contexts in which music technology can be applied
- knowledge and understanding of 20th & 21st century musical styles / genres and how this relates to the development of music technology
- the ability to critically reflect on own work

# Music Technology Concepts

	<b>Technological developments</b>	<b>Technological terms</b>	<b>Styles &amp; genres</b>
<b>National 3</b>	<p>player pianos acoustic horn/cylinder wax cylinders gramophone records vinyl LPs 45 RPM records</p>	<p>beat capture channel distortion / overload dry / wet MIDI sequenced data session log track-names / track-list virtual instrument tracks volume</p>	<p>jazz blues rock disco</p>
<b>National 4</b>	<p>radio juke box CD players MP3 players electric guitar (solid body) electronic organ</p>	<p>apps arrange window arrangement clipping feedback file management intro/outro lead vocal popping and blasting sibilance take tempo</p>	<p>ragtime swing skiffle synth pop electronica dance music rap</p>
<b>National 5</b>	<p>reel to reel magnetic tape stereo LPs guitar pick-up 8-track recording multi-track recording (analogue &amp; digital) audio/MIDI interface virtual instruments performance software</p>	<p>glitch hum cyclical / loop play list sampler sound card spillage / leakage toolbox transpose</p>	<p>rock 'n' roll Scottish/Celtic rock 60s pop punk country music hip hop musical</p>

# Music Technology Concepts

	<b>Controls and effects</b>	<b>Processes</b>
<b>National 3</b>	<p>           delay            EQ (equalisation)            gain/trim            mono(phonic)            panning            playback            record            reverb(eration)            stereo(phonic)            time domain         </p>	<p>           backup copy            format            mix/mixing            balance            normalising            sampled            save            audio/stereo master            USB (port)         </p>
<b>National 4</b>	<p>           compression/expansion            effects (FX)            fader            line level            microphone level            tone control            transport bar/controls         </p>	<p>           click track            copy            cut &amp; paste            effects pedals            final mix            general MIDI (GM)            guide vocal            import/export            input/output            mute            overdub            peak            sequencer            signal path            synchronisation (sync)            WAV/AIFF file         </p>
<b>National 5</b>	<p>           auxiliary (Aux) in/out            Aux send/return            boost EQ/cut EQ            chorus effect / depth            close mic'd            dB (decibels)            gated reverberation (reverb)            LFO            noise gate            pitch bend            punch in/out         </p>	<p>           beat-matching            digital processor            drop in/out            fade in/out            import/export            latency            locators            markers            multi effects processor            quantisation            vocal enhancer         </p>

# Understanding Music in 20/21<sup>st</sup> Century

	<b>Melody/ harmony</b>	<b>Rhythm / tempo</b>	<b>Texture/ structure/ form</b>	<b>Timbre/ dynamics</b>
<b>National 3</b>	ascending descending step (stepwise) leap (leaping) repetition sequence improvisation chord chord change	accent / accented beat / pulse BPM (beats per minute) 2, 3 or 4 beats in the bar on the beat off the beat repetition slower / faster pause drum fill	unison / octave harmony/chord solo accompanied/ unaccompanied repetition riff ostinato	acoustic / electronic striking (hitting), blowing, bowing, strumming, plucking acoustic guitar electric guitar piano organ synthesiser drum kit voice/vocals crescendo - <i>cres.</i> diminuendo - <i>dim.</i>
<b>National 4</b>	major (tonality) minor (tonality) broken chord arpeggio change of key pedal scale octave vamp scat singing	syncopation 2 3 4 6 4 4 4 8 anacrusis accelerando - <i>accel.</i> rallentando - <i>rall.</i> a tempo	binary — AB ternary — ABA verse and chorus (song structure) middle 8 imitation	instruments: woodwind string brass percussion bass guitar distortion muted backing vocals soprano alto tenor bass
<b>National 5</b>	atonal cluster inverted pedal chromatic whole tone scale glissando modulation countermelody pitch bend tone/semitone	ritardando - <i>rit.</i> cross rhythms	strophic walking bass homophonic polyphonic coda bridge / link passage instrumental break	arco pizzicato rolls mezzo soprano baritone

# National 3 Music Technology Concepts

2, 3 or 4 beats in the bar	Time signatures in simple time - 2/4, 3/4 or 4/4
accent / accented	Accented notes are notes which sound louder than others
accompanied / unaccompanied	Other instrument(s) or voice(s) supports the main melody.
acoustic guitar	A six-string or twelve-string guitar that produces sound acoustically without the aid of electronics; although some may have pick-ups attached or built in. Acoustic guitars may have either nylon or steel strings. In the case of classical, or strings are nylon and give a much softer sound than steel-strung 'Spanish' guitars, the strings are nylon and give a much softer sound than steel-strung guitars which tend to be used more for rock, pop, jazz and folk music.
acoustic horn / cylinder	A horn is a tapered sound guide designed to provide an acoustic impedance match between a sound source and free air. This has the effect of maximizing the efficiency with which sound waves from the particular source are transferred to the air. Conversely, a horn can be used at the receiving end to optimize the transfer of sound from the air to a receiver.
acoustic / electronic	The 'sound' of a room or space. The acoustic of any space is defined primarily by its size and the types of surfaces therein. These two characteristics in turn determine how a sound wave is dispersed within the space. A church, for example, is generally a large space with hard surfaces on the walls, ceilings and floors. A sound wave therefore takes a long time to disperse in such a space as the hard surfaces absorb very little of the wave's energy and reflect it back into the room. But a domestic living room is a much smaller space and will have soft furnishings, curtains, etc., that will absorb more quickly the energy of the wave.
ascending	Ascending notes rise in pitch.
audio / stereo master	Electronically produced or reproduced sound.
backup copy	A copy of an original file (or files) that is stored separately. To prevent accidental editing or deletion backups are best stored on a separate storage device used only for this purpose.
beat	The basic rhythmic unit in a piece of music - usually grouped in twos, threes, or fours
beat / pulse	The basic pulse you hear in music.
blowing	The sound produced by blowing into or across the mouthpiece of the instrument, eg brass, woodwind and recorders.

blues	<p>Blues started as Black American folk music, developing from spirituals and work songs. Blues music is often in 4/4 time and is mostly patterned on a 12-bar structure (although 8 and 16 bars are also found) and on a scale where some notes are flattened. Due to its origins in slavery, blues music tends to have a sadness to it</p> 
bowing	The sound produced by drawing the bow across the strings of a stringed instrument, eg violin or cello. Bowing is also known as arco.
BPM (beats per minute)	The tempo of a piece will typically be written at the start of a piece of music, and in modern Western music is usually indicated in beats per minute (BPM).
capture	To enter (audio or visual) data into a computer for processing or storage.
channel	On a mixing desk the channel is the series of electronic circuits designated to an input source. This is then duplicated a number of times to accommodate more inputs. A 16-channel desk therefore has 16 sets of the same circuitry to accommodate 16 different input sources.
chord	Two or more notes sounding together.
chord change	Chord progression - I-IV-V-I and so on
crescendo ( <i>cres</i> )	Music getting gradually louder
delay	The interval between an original signal and its repetition. While this is achieved electronically, it is similar to, and is used practically, as echo. Modern digital-delay processors can repeat the original sound forever and with almost an infinite initial delay time.
descending	Descending notes fall in pitch
diminuendo ( <i>dim</i> )	music getting gradually quieter
disco	Disco is a genre of music which was popular from the mid to late 1970s. Its initial audiences were club-goers from the African American, Latino, Italian American, and psychedelic communities in New York City and Philadelphia during the late 1960s and early 1970s. Disco also was a reaction against both the domination of rock music and the stigmatization of dance music by the counterculture during this period. Women embraced disco as well, and the music eventually expanded to several other popular groups of the time.

distortion / overload	The rasping, grating sound generated when an incorrect (too high) setting is used. While generally it is an undesirable effect, on some instruments, the electric guitar and the organ, for example, it has become a standard creative effect. See also overload.
drum fill	A rhythmic decoration played on a drum kit.
drum kit	The group of drums and cymbals that have been pieced together and standardised over the years to create a drum kit includes a bass drum, snare drum, usually 2–4 tom-toms, a pair of hi-hats and at least one crash and one ride cymbal. Rock and fusion drummers have managed to take this to extremes, however, and it is not unusual to find kits that incorporate two bass drums, two snares, countless toms and cymbals, a gong and various other bits of kitchen hardware.
dry	A signal that has not had an effect added to it.
electric guitar	A version of the acoustic guitar which derives its signal entirely electronically from a series of pick-ups positioned close to the steel strings (nylon strings won't work due to the use of the electromagnetic principle – see dynamic microphones and pick-up). While electric guitars have jack sockets, their output is more like that of a microphone; therefore, when recording there are three preferred techniques: <ol style="list-style-type: none"> <li>1. positioning a microphone in front of the amplifier speaker</li> <li>2. plugging the guitar into a DI box</li> <li>3. using a guitar pod/processor which fulfils the roles of both the amplifier and the DI box.</li> </ol>
EQ (equalisation)	The tone control. Equalisers split the full range of audible frequencies into up to four manageable ranges: low frequency (LF), low-mid frequency (LMF), hi-mid frequency (HMF) and high frequency (HF). This gives a greater diversity of control over the entire frequency range for both corrective and creative purposes. There is a range of different types of equalisers for different roles in audio; all are useful, all are potentially damaging to the signal, so equalisers should be used sparingly.
faster	The tempo (speed) increases
format	The type of data used for storing digital audio on a computer / storage device. Common formats include: MP3, aiff, m4a, wma & wav

gain/trim	<p>Amplification. Gain is determined by the amount an electronic circuit amplifies the input signal. The gain control on any device is therefore, very, very important. Setting a gain too low will mean the engineer has to compensate for low-level signals by increasing output volumes. This results in increased noise levels. Too much gain and the signal will overload the input circuitry and result in distortion.</p> <p>All recording devices have a gain control as part of the pre-amplifier. It makes sure the signals from all the different sources are at a suitable level for the following electronics as mic-level sources generally have a much lower output signal than line-level sources. The gain control evens them out.</p>
gramophone records	These records were the primary medium used for music reproduction for most of the 20th century, replacing the phonograph cylinder, with which it had co-existed, by the 1920s
harmony / chord	The sound of two or more notes made at the same time
improvisation	The performer makes up music during the actual performance, they don't have the melody written down to help, although there may be suggested chords as a guide
jazz	At first this was music created by black Americans in the early 20th century. Features of the music may include syncopation and improvisation.
leap (leaping)	Jumping between notes which are not next to each other.
MIDI	Musical Instrument Digital Interface. A digital language that enables devices to talk to one another in a standardised format. While MIDI was originally devised for keyboards and musical instruments, more and more effects processors and devices are responding to it and may be programmed using MIDI.
mix / mixing / balance	The act and art of creating a balance of all the recorded tracks, processing where appropriate and necessary, and creating a two-track, stereo-mixed version of the music.
mono(phonic)	A single channel of audio.
normalising	System of connection in studios where a device that will normally be connected to another input or output is plugged into it permanently via a patchbay. If the device needs to be connected elsewhere, then inserting a patch-lead into the socket will break the normalised connection.
on the beat / off the beat	On the beat -Notes played on the stronger beats, eg: beats 1 and 3 in a 4/4 bar./Off the beat -Notes played on the weaker beats, eg beats 2 and 4 in a 4/4 bar.
organ	A keyboard instrument usually found in churches. It usually has more than one keyboard, plus pedals that are played with the feet.

ostinato	A short musical pattern repeated many times.
panning	The pan control serves two functions: 1. In a mix it places a mono signal in the stereo sound field from left to right. The 'omni' pattern. 2. In tracking it works in conjunction with the routing switches to determine which tape output the signal will be sent to. Panning to the left will send the signal to the odd numbered outputs and panning to the right will send it to the even numbered tracks.
pause	A note or rest that is held longer than written. The pause sign (looks like an eye and an eyebrow) is written above the note or rest that is to be held as a pause.
piano	Quiet volume, abbreviated to 'p'.
playback	The act of replaying a sound (or video) recording, especially in order to check the quality of a recording that is newly made.
player pianos	A player piano (also known as pianola or autopiano) is a self-playing piano, containing a pneumatic or electro-mechanical mechanism that operates the piano action via pre-programmed music perforated paper, or in rare instances, metallic rolls. The rise of the player piano grew with the rise of the mass-produced piano for the home in the late 19th and early 20th century.
plucking	Sound made when you pluck the strings of a stringed instrument with a finger or fingers.
record	To store a performance onto a medium so it can be played back or edited
repetition	An exact repeat of a musical idea
reverb(eration)	The natural series of very short and dense echoes of a sound that occur in a confined space such as a room or a hall. While echoes with a longer delay would be discernible, in reverb the echoes happen so fast and are so dense, it is impossible for the listener to hear individual repeats. Reverb is the essence of natural sound. Listening to a close miked instrument is like having the instrument play in your ear in a very small room. The addition of reverb to a sound makes it appear as if the instrument is being played in a real acoustic. Nowadays reverb can be emulated digitally very easily and nearly all effects processors have a wide range of reverb types for different applications. See also gated reverb.
riff	A repeated rhythmic chord sequence within a song or around which a song may be based.
rock	A style of popular music with a heavy, driving beat. Usually features electric guitar, bass guitar and drum kit.

sample	A digital snapshot of an acoustic sound. An A/D converter takes a constant stream of samples in order to convert acoustic sounds into digital information. A sampler can take a short series of these snapshots, alter their pitch and duration and play them back as tuned notes.
save	To store data on computer or storage device
sequence	A melodic phrase which is immediately repeated at a higher or lower pitch.
sequenced data	The organisation of data, such as pre-recorded loops and/or automation cues, to create an audio product.
session log	A note, usually formalised, of the activities carried out and completed within a session. Session logs are a great way of keeping on top of a recording project. Keeping a note of settings, microphone placements, even problems you have encountered in a session means you can always come back to the log in the future to reproduce the settings or overcome a similar problem
slower	The tempo (speed) decreases.
solo	One instrument or voice. A prominent instrument or voice can be solo even when part of a larger ensemble.
step (stepwise)	Moving up or down between notes which are next to each other.
stereo(phonic)	A two-channel audio system with the channels designated as left and right. Devised primarily because we have two ears, stereo reproduction of recorded sound has been the norm for many decades as it offers an excellent representation of what we hear acoustically. Any multi-track recording has to be mixed to stereo in order for it to be played on a standard domestic hi-fi system.
striking (hitting)	The sound is produced by hitting the instrument.
strumming	A finger, fingers or plectrum are drawn across the strings of an instrument, usually guitar.
synthesiser	Electronic instrument, usually keyboard based, that uses electronically generated waveforms through filters and processors to emulate (or synthesise) acoustic sounds. While most of these emulations of real instruments are at best approximate, synthesisers are capable of generating a wide range of sounds that no acoustic instrument ever could. Thus they have become an important element of modern sound production as an instrument in its own right.
time domain	Those types of effects processes that change the time characteristics of an input signal by adding to it. Delay, reverb, chorus, phasing or any of the delay or reverb-related effect variations.
track (names / list)	A single channel of recorded audio. Can also be the final finished product.

unison / octave	Singing or playing the same notes at the same time. Octave - The distance of 8 notes eg: from C up to C.
USB (port)	Universal Serial Bus (USB) is an industry standard developed in the mid-1990s that defines the cables, connectors and communications protocols used in a bus for connection, communication and power supply between computers and electronic devices. USB was designed to standardize the connection of computer peripherals (including keyboards, pointing devices, digital cameras, printers, portable media players, disk drives and network adapters) to personal computers, both to communicate and to supply electric power. It has become commonplace on other devices, such as smartphones, PDAs and video game consoles. USB has effectively replaced a variety of earlier interfaces, such as serial and parallel ports, as well as separate power chargers for portable devices.
vinyl LPs and 45 RPM records	The LP (Long Play), or 33 $\frac{1}{3}$ rpm microgroove vinyl record, is a format for phonograph (gramophone) records, an analogue sound storage medium. Introduced by Columbia Records in 1948, it was soon adopted as a new standard by the entire record industry. Apart from relatively minor refinements and the important later addition of stereophonic sound capability, it has remained the standard format for vinyl "albums".
virtual instrument tracks	Virtual Instrument tracks contain virtual instrument clips. Virtual instrument clips can be recorded or loaded
voice / vocals	The human instrument used to speak or sing.
volume	In music, dynamics normally refers to the volume of a sound or note, but can also refer to every aspect of the execution of a given piece, either stylistic (staccato, legato etc.) or functional (velocity). The term is also applied to the written or printed musical notation used to indicate dynamics.
wax cylinders	Phonograph cylinders were the earliest commercial medium for recording and reproducing sound. Commonly known simply as "records" in their era of greatest popularity (c. 1888–1915), these cylinder shaped objects had an audio recording engraved on the outside surface which could be reproduced when the cylinder was played on a mechanical phonograph. The competing disc-shaped gramophone record system triumphed in the market place to become the dominant commercial audio medium in the 1910s, and commercial mass production of phonograph cylinders ended in 1929.
wet	A signal that has had an effect added to it

# National 4 Music Technology Concepts

2/4 time signature	Simple Time - 2 Crotchet Beats per bar
3/4 time signature	Simple Time - 3 Crotchet Beats per bar
4/4 time signature	Simple Time - 4 Crotchet Beats per bar
6/8 time signature	Compound Time - 2 dotted crotchet beats per bar
a tempo	The music returns to the main tempo (speed) after there has been a change.
accel(erando)	The tempo (speed) of the music gradually becomes faster.
anacrusis	The notes which appear before the first strong beat of a musical phrase, particularly at the start of a piece.
app(s)	An application, typically a small, specialized program downloaded onto mobile devices
arrange window	A window on a software application that shows the entire project (instruments - wave and MIDI)
arrangement	The instruments used, the parts they play and the structure of a song or piece of music. A skilful arranger can take any piece of music and totally change its feel or tone by adjusting these variables and the piece's tonality.
backing vocals	Vocal lines in an arrangement that are secondary to, but support and enhance, the lead vocal.
bass guitar	Originally devised as an electric double bass from which it takes its open-string tunings (EADG), the bass guitar has become an instrument in its own right providing the bass parts in rock, pop and occasionally jazz music. While the standard instrument is four stringed, it is not unusual to see five-string basses with an additional lower (C or B) string, or even six-string instruments with an additional lower and upper string. Most bass guitars are active in that they require battery power for a circuit that controls the tone of the instrument.
binary – AB	A form in which the music is made up of two different sections labelled A and B. Each section may be repeated.
brass instruments	A family of instruments made from metal with a mouthpiece, eg: trumpet and euphonium.
broken chord / arpeggio	In a broken chord the notes of a chord are played separately. In an arpeggio notes of a chord played one after the other.
CD players	A device used to play compact discs.
change of key	A move from one key to another.
click track	A metronome track recorded onto one track of the multi-track recorder to provide a guide tempo and count-in for the performers. Click tracks are usually generated electronically and so ensure that drummers don't slow down or speed up. Care must be taken not to include the click track in the final mix of the music.

clipping	Severe and potentially damaging form of distortion that happens when a signal is too high for the piece of equipment it is being fed into. This can be particularly damaging to loudspeakers. Manufacturers include many safeguards to avoid clipping in their equipment. It is very important to monitor meters and input lights. Flashing red is never a good sign.
compression / expansion	"Squashing" the sound so that the difference between highest and lowest level of the sound is lessened. This usually means amplifying lower level signals, resulting in a sound that is perceived as louder and more "punchy"), the reverse of this is "expansion"
copy	To copy a section of a file/music/MIDI/effects/automation etc.
cut & paste	To remove a section of file/music/MIDI/effects/automation etc. and paste to another place on your project.
distortion	The rasping, grating sound generated when an incorrect (too high) setting is used. While generally it is an undesirable effect, on some instruments, the electric guitar and the organ, for example, it has become a standard creative effect. See also overload.
effects (FX)	These are ways of changing and manipulating audio/MIDI sounds using software plugins - (such as reverb, delay etc.)
effects pedals	Pedals used by performers to control effects like distortion and reverb - electric guitarists make great use of these to manipulate the sound.
electric guitar (solid body)	A guitar which requires an electric amplifier to produce sound.
electronic organ	An electronic organ is an electronic keyboard instrument which was derived from the harmonium, pipe organ and theatre organ. Originally, it was designed to imitate the sound of pipe organs, theatre organs, band sounds, or orchestral sounds.
electronica / dance music	Electronically produced sounds digitally recorded and arranged to form a musical composition. Used extensively in the dance music genre. Donna Summer's song "I Feel Love" was a ground breaking dance / discotheque hit with no traditional instruments.
export	To save data in a format usable by another application program, such as exporting a GarageBand project into MP3 format.
fader	The linear sliding control that adjusts the channels output. A fader is not a volume control, it is a variable attenuator. When the fader is fully down, it is at maximum attenuation, and when it is fully up, it is at minimum attenuation. The signal, therefore, is always present; the fader just determines how much of the signal is allowed to pass through. This can be depicted as similar to a sluice gate in a lock. While the gate is shut or down, no water is allowed to flow. When the gate is raised, the water may flow. Opening the gate further lets more water flow.

feedback	<p>1. Acoustic feedback occurs when the output of a loudspeaker can be picked up by a microphone that is being amplified by the same speaker system. It is characteristically a high-pitched squeal.</p> <p>2. Positive feedback occurs, similarly, when an output is fed back to its own input.</p>
file management	The system that an operating system or program uses to organize and keep track of files. For example, a hierarchical file system is one that uses directories to organize files into a tree structure.
final mix	The version of the mixdown that will actually be submitted as a stereo master. The final mix features a balance of instruments that all involved are happy with, additional effects that enhance the overall production, and perhaps the application of some dynamic processors, usually equalisers and compressors, to the overall mix
general MIDI (GM)	An agreed standard to ensure compatibility between MIDI equipment manufacturers. This term is now often used to just to refer to the agreed 128 voices in the GM sound set or the agreed standard for a set of drum/percussion sounds contained within MIDI compatible sound sources.
guide vocal	A vocal track that is recorded in the early stages of the project to give the performers an indication of the progression of the song. This will generally be replaced later in the project by a more carefully performed and recorded lead vocal track.
imitation	Where the melody is immediately copied in another part.
import	To bring data into one application program from another, for example, inserting an MP3 file into Audacity to create a sample/loop.
input	The signals or data received by the computer.
input/output	The communication between a computer and the outside world. For Music Technology this is usually done with an Audio Interface which is an I/O device – it simultaneously transmits input and output data from the computer to the user.
intro	A small section of music at the start of a piece of music (introduction for the piece)
juke box	A coin operated record player/cd player/mp3 player
lead vocal	The main vocal part or track in a song.
line level	The output from a purely electronic source, a keyboard for example or any processing device. The actual output level is set by the manufacturer to industry standards depending on the standing of the equipment as 'semi-professional' (-10 dBV) or 'professional' (+4 dBu).
major / minor (tonality)	The music sounds in a major key – often described as having a cheery, happy feel to it. The music sounds in a minor key, often described as having a sadder feel than major.

microphone level	The level or voltage of a signal produced by a microphone. Typically mic-level signals are considerably lower than line-level signals, so a pre-amplifier must be used to boost their output. In some condenser microphones, the output of their built-in preamplifier is high enough not to require any more boosting.
middle 8	In popular music, a section which provides a contrast to the opening section. It is often eight bars long.
MP3 players	An electronic device (usually SSD), that stores and plays audio files like MP3s.
mute	To silence a channel of music
muted	Using a device which reduces the volume or alters the sound of an instrument.
octave	The distance of 8 notes, for example: from C up to C.
output	The signals or data sent from the computer.
outro	A small section of music at the end of a piece of music (rounds off the piece like a coda)
overdub	In multi-track recording, the act of playing a new track of material in synchronisation with one previously recorded.
peak	Maximum level of any signal.
pedal	Short for pedal point. A note which is sustained, or repeated continuously, in the bass beneath changing harmonies.
percussion instruments	Instruments that are played by hitting, striking, shaking or scraping.
popping and blasting	The explosive sounds in singing and speech that cause audible pops and thumps in a recorded vocal. These can be effectively reduced using a pop-shield.
radio	An electronic device designed to receive, demodulate, and amplify radio signals from sound broadcasting stations, etc...
ragtime	A style of dance music which became popular at the end of the 19th century and which helped to influence jazz.
rall(entando)	The tempo (speed) of the music gradually slows down.
rap	Rhyming lyrics that are spoken and performed in time to a beat. Rapping is popular in hip-hop music.
scale	A sequence of notes moving by step in an ascending or descending order.
scat singing	Nonsense words, syllables and sounds are improvised (made up) by the singer. Sometimes the singer is imitating the sounds of instruments.
sequencer	The computer package/hardware device used to facilitate the input and editing of MIDI data

sibilance	High-frequency (normally between about 5 kHz and 10 kHz) lispings or spitting noise on vocal recordings that occurs on 's' or 'sh' sounds. Sibilance is usually caused by bad microphone technique or over use of equalisation. While it is predominantly an issue on vocal tracks, it can also be heard on cymbal tracks. Eliminating sibilance should be attempted at source; however a device called a de-esser may be employed to remove the problem.
signal path	The route that a signal takes through an audiosystem from input to outputs. The route may be simple, such as a microphone plugged into an amplifier and loudspeakers plugged into the amplifier to create a basic PA system. But in the case of a professional recording studio, it can be very complex, involving large numbers of processors and monitoring systems. It is important for the sound engineer to understand each of the different routes any signal may take in
skiffle	Skiffle is a type of popular music along with jazz, blues, and folk with roots in the USA. Usually performed using homemade or improvised instruments. Originating as a term in the United States in the first half of the twentieth century, it became popular again in the UK in the 1950s, where it was mainly associated with musician Lonnie Donegan and played a major part in beginning the careers of later eminent jazz, pop, blues, folk and rock musicians. A style of 1920s and 1930s jazz deriving from blues, ragtime, and folk music, using both improvised (such as a washboard) and conventional (like a guitar)
string instruments	The family of instruments which have strings. The sound is produced by dragging a bow across the strings or by plucking them with the fingers.
swing	A jazz style which started in the 1930s and was performed by a big band. The numbers and types of instruments in the big bands increased during this period, through the influence of swing.
synchronisation (sync)	When two or more tracks or devices play at the same time, in time.
syncopation	Strongly accented notes playing off or against the beat. Syncopation occurs in all kinds of music.
synth pop	Genre of popular music that first became prominent in the 1980's in which the synthesiser is the dominant instrument.
take	The recorded performance of a part or track of a song. Standard studio practice has the performer do a series of takes and the best take, or a combination to make up the best take, will be used in the final mix.
tempo	The speed of a song measured in beats per minute (BPM).
ternary - ABA	A B A – 3 part form: Section A, followed by a B section which is a different melody, than a return to the A section.

tone control	A basic form of equalisation on basic devices. The tonecontrol will not have the sophistication of studio equalisers and will in general have only three controls – bass, mid and treble – to boost or attenuate a range of pre-assigned frequencies.
transport bar / controls	A small moveable window which houses the play, record, location and tempo controls in most DAW's (Digital Audio Workstations).
vamp	A rhythmic accompaniment with a bass note played on the beat and a chord off the beat. Usually played on piano or guitar.
verse and chorus (song structure)	A structure/ form popular in many songs. The music of the verse will repeat, often with different words, and between verses the chorus will normally repeat and features different music to the verse.
voices — S A T B	The human instrument used to speak or sing. Soprano - the highest range of female voice. Alto - the lowest female voice. Tenor - a high-pitched, adult male voice. Bass - the lowest male voice.
WAV/AIFF file	This is an uncompressed file format used by most recording companies (AIFF was developed by Apple in 1988)
woodwind instruments	Instruments which produce sounds by blowing across a hole, against an edge or through a single or double reed, eg flute, clarinet, saxophone, oboe and bassoon. They need not be made of wood.

# National 5 Music Technology Concepts

60s pop	In the 1960's Pop music in the USA and UK gradually became controlled by new young vocal-groups, taking their power from a combination of the performer's charisma and great songwriters. Artists include: The Beatles, The Beach Boys, Bob Dylan and Diana Ross.
arco	Instruction given to string players to use a bow.
atonal	Atonal music has no feeling of key, major or minor. It is very dissonant and lacks a 'nice' melody and accompaniment.
audio / MIDI interface	An interface designed to allow audio, or MIDI data, to be recorded and/or played back in various ways from a computer.
auxiliary in(put) / out(put) (AUX)	The AUX port is typically used for audio equipment to receive peripheral sound sources. Auxiliary inputs include digital music players and returns from effects units. Auxiliary outputs could be effects units and speakers.
auxiliary send / return	A mixing desk function that allows a signal or group of signals to be sent to a separate output – an auxiliary output– for either monitoring or processing. In the case of monitoring a pre-fade send will be used. For effects processing a post-fade send will be used and the signal with the process added to it will then be returned to the mixing desk.
beat-matching	Originally a DJ technique of pitch shifting or time-stretching an upcoming track to match its tempo to that of the currently playing track. Beat-matching can now be done with software plugins – where the audio is processed and the BPM is worked out – or manually by listening to the audio and looking for peaks in the wave-file.
boost EQ / cut EQ	When adjusting the balance of a recording using Equalisation you can either Boost – strengthen, or Cut – weaken, the desired frequencies. For example, an engineer would use a High-Cut Filter to eliminate the 'hiss' from a recording.
bridge / link passage	A contrasting section of music often used to prepare for the return of the verse and the chorus.
chorus effect and depth	An effect whereby short delays and slight modulations are added to a signal to make it sound as if there is more than one player. It therefore applies a detuning effect which can be detrimental to some instruments (for example, the acoustic piano) but can be very effective on others (for example, the electric guitar). Depth??
chromatic	Notes which move by the interval of a semitone.

close mic'd	When a microphone is positioned between 2 cm and about 30 cm from an instrument, it is said to be close miked. Close mic'ing helps to reduce problems with leakage from other instruments in the proximity, but can lead to other problems related to sound level and the proximity effect. It can also mean that performers may hit the microphone or that the microphone will also pick up the sounds of the instrument being played (keys on a flute moving, for example). As with all microphone techniques, the potential problems have to be weighed up against the benefits.
cluster	A term used to describe a group of notes, which clash, played together.
coda	A passage at the end of a piece of music which rounds it off effectively.
countermelody	A melody played against the main melody.
country music	Country music is a genre of American popular music that originated in the rural regions of the Southern United States in the 1920's. Country music often consists of ballads and dance tunes with generally simple forms and harmonies accompanied by mostly string instruments such as banjos, electric and acoustic guitars, fiddles, and harmonicas.
cross rhythms	Contrasting rhythms played at the same time or played with unusual emphasis on notes.
cyclical / loop	Originally referring to a segment of magnetic tape whose ends are joined making a strip that can be continuously replayed. In modern terms, a loop is a short repeating section of sound material, commonly used in hip-hop and soundtracks.
dB (decibels)	Decibel. The unit of measurement for audio.
digital processor	A specialised microprocessor optimized for the operational needs of digital signal processing.
drop in/out	See punch in/out
eight-track recording / multi-track	Multi-track recording devices have two or more tracks with the ability to monitor or cue one track while recording on the other. This allows the process known as overdubbing whereby a single musician can build up a song by performing each of the parts one after the other. Recording each instrument onto its own track also allows the sound engineer a great deal of control over each track. An equalisation setting, for example, can be added to one track and another setting to another track and so on. Multi-track recorders come in many formats these days from 4-track devices to 24-track devices and computer-based hardware and software systems that feature almost infinite multi-track recording capabilities.
export	To save data in a format usable by another application program, such as exporting a GarageBand project into MP3 format.

fade in/out	<p>Fade in - When a track or piece of music increases in volume gradually from silence.</p> <p>Fade out – the opposite of a fade in – when a track or piece of music decreases in volume gradually to silence.</p> <p>This has become a widespread practice in mixdown technique as a tidy way of ending a song.</p>
gated reverberation (reverb)	<p>An effect whereby a noise gate is applied to the output of a reverb processor. The natural decay of the reverb is therefore cut off sharply resulting in a rather startling unfinished sound. The effect is most often used on drums and gives a powerful, if slightly obvious, sound. Nowadays, effects processors tend to have gated reverb settings pre-set.</p>
glissando	<p>Sliding from one note to another, taking in all the notes in between where possible.</p>
glitch	<p>A short and nasty 'click' in digital audio. This may be caused by a corruption of the digital information or a poor edit of the sound file.</p>
guitar pick-up	<p>A pickup device acts as a transducer that captures mechanical vibrations (between the magnet in the pickup and the strings) and converts them to an electrical signal, which can be amplified and recorded.</p>
hip-hop	<p>A style of music formed in 1970's New York consisting of stylized rhythmic music that commonly accompanies rapping - although rapping is not a required component of hip-hop music. The genre may also incorporate other elements of the wider "hip-hop culture", including DJ-ing, scratching, beat-boxing, and sampling.</p>
homophonic	<p>Texture where you hear melody with accompaniment or where all the parts play a similar rhythm at the same time.</p>
hum	<p>Electronically generated low-frequency noise. Hum is usually the result of interference from mains cables or poorly earthed or grounded equipment. It is worth noting that only faulty or incorrectly wired equipment will generate hum.</p>
import	<p>To bring data into one application program from another, for example, inserting an MP3 file into Audacity to create a sample/loop.</p>
instrumental break	<p>An instrumental or percussion section during a song being a "break" from the main parts of the song or piece.</p>
inverted pedal	<p>A note which is held on or repeated continuously at a high pitch.</p>
latency	<p>The delay between a signal going into a processor and coming back out again. While latency may occur to a small degree in most audio devices where what is being input is being simultaneously monitored, it predominates in A/D converters and D/A converters in computer-based recording set-ups. This is due to the time it takes for the computer to digitise and then un-digitise the audio information</p>

LFO	Low Frequency Oscillator. An oscillator used as a low-frequency modulation source; for example in the chorus effect, whereby the delayed signal is detuned by LFO modulation.
locators	Left/Right-locators are used to set the boundaries for recording (or a playback loop) in a DAW.
markers	Used to easily find your place in the Arrange window, markers are usually navigable to using the controls in the Transport window. The Marker Track is commonly found at the top of the window. When adding markers you can sometimes include a small amount of information, such as: Verse, Chorus, Solo, Break, etc...
modulation	A change of key.
multi effects processor	A multi-effects device (multi-FX device) is a single electronics effects pedal or standalone device that contains many different electronic effects including: reverb, delay, chorus, phaser, etc... Multi-FX devices allow users to "pre-set" combinations of different effects; allowing musicians and sound engineers quick access to different effects combinations.
musical	A musical play which has speaking, singing and dancing and is performed on a stage
noise gate	A signal-activated switch. If a signal reaches a pre-set threshold, the noise gate opens and allows the signal to pass through. If the threshold is not met, the gate stays shut eliminating any lower level noise or hiss. Gates are very effective and useful devices in the studio, operating as automatic mutes or cuts to reduce low-level background noise while recording using microphones
performance software	Software, such as Ableton Live, developed for performing which lets users record and edit without stopping playback; allowing musicians to use the software as their 'instrument'.
pitch bend	Changing the pitch of a note, for example by pushing a guitar string upwards.
pitch bend	Describes the pitch sliding from one note to another. Sometimes called "glide" or "portamento" on Synthesisers.
pizzicato ( <i>pizz.</i> )	Abbreviation pizz. An instruction given to string players to pluck the strings instead of using the bow.
play list	A list of previously edited files, usually in a DAW, upon which the engineer can draw to create a final version of a piece of music
polyphonic	Texture which consists of two or more melodic lines, possibly of equal importance, which weave independently of each other.

punch in/out	A technique in multi-track recording that lets a performer record over mistakes or change parts previously recorded by punching or dropping in and out of record mode while the machine is in playback. Punching or dropping in can be performed by an engineer pushing the right buttons at the right time, the performer hitting a foot switch at the required point, or by advanced use of the machines auto-locate functions whereby the multi-track recorder can be programmed to drop in and out of record mode automatically.
punk	Punk is a music genre that developed in the USA, UK and Australia in the mid-1970's. Punk bands created fast, hard-edged music, typically with short songs, stripped-down instrumentation, and often political, anti-establishment lyrics.
quantisation	Rounding up or down. In digital audio, waveforms are measured within pre-set ranges, if the waveform being recorded doesn't fit exactly into one of these ranges, then it is either increased or decreased to the closest value to fit neatly. While in general A/D converters do this extremely well and without any noticeable degradation of the original waveform, occasionally there can be a problem in the rounding up or down and digital noise may occur. This is known as quantisation noise or error.
recording (analogue and digital)	Analogue - A device that utilises a changing voltage or current to represent an acoustic signal. Digital - An electronic representation of analogue sounds that utilises 1's and 0's.
reel-to-reel magnetic tape	A medium used to store audio in the earliest tape recorders, developed in the 1930's. It was subsequently used for data storage in early computers and video recording in the early 1950's.
ritardando ( <i>rit</i> )	The music slows down.
rock 'n' roll	1950s American music which grew from the combined styles of jazz, blues, gospel and country.
rolls	A very fast repetition of a note on a percussion instrument, eg: on a snare drum or timpani.
sampler	An electronic device used to copy and digitally manipulate a segment from an audio recording for use in a new recording.
Scottish / Celtic rock	A style of music that mixes Celtic folk music and rock together.
semitone	The distance between two notes, white to black on a piano / keyboard or fret to fret on a guitar.
sound card	An internal computer expansion card that facilitates the input and output of audio signals to and from a computer under control of computer programs.

spillage / leakage	The overspill from one instrument into another instrument's microphone. This will only occur where more than one instrument is being simultaneously miked up in the same room. Leakage can be minimised by using directional microphones and acoustic screens; but it is difficult to totally eradicate it. There may also be leakage from a pair of headphones if the monitoring or foldback volume is turned up particularly high. It is not unusual, for instance, for a click track monitored through headphones to leak into one or more of the drum microphones.
stereo LPs	An analogue sound storage medium made from vinyl (polyvinyl chloride, PVC, the 3 <sup>rd</sup> most produced plastic, generally used in construction). Stereo LP records became commercially available in 1958.
strophic	A song which has music repeated for verses/choruses, therefore the same music will be heard repeating throughout the song.
tone	The distance between two notes, equivalent to two semitones (for example, two frets on a guitar).
toolbox	The collection of effects, processes and functions available within the DAW software you are using.
transpose	The process of manipulating a recording in to a key other than the original. On 'tape recording' devices this could be done by increasing the playback speed.
virtual instruments	A virtual instrument (or software instrument) is a software application that enables the user to produce or play sounds on a computer. Programs of this kind can be run on the computer as plug-ins hosted by DAW's (Cubase, GarageBand, etc.) or as stand-alone applications.
vocal enhancer	A software plugin used to process raw vocal takes that is designed to make vocals clear, crisp and more defined by boosting the desired characteristics of the recording.
voices - baritone	A male voice whose range lies between that of bass and tenor.
voices – mezzo soprano	A female singer whose voice range lies between that of a soprano and an alto.
walking bass	A bass line (low notes) often featured in a variety of jazz styles. It goes for a walk, up and down a pattern of notes, and is often played on a double bass.
whole tone scale	A scale containing no semitones but built entirely on whole tones.

**Additional Notes:**

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