Unit 13: Music technology (LEVEL 3)

Learning outcomes

By completing this unit candidates will develop a thorough knowledge and understanding of the advancements in music technology from the introduction of simple recording techniques to the digital age.

Candidates will produce evidence to meet the unit assessment objectives in order to show that they can:

- investigate developments in music technology
- practise recording skills and editing skills
- produce a piece of music on a synthesiser or midi module
- practise techniques for using a digital sequencer
- compare and contrast different audio encoding technologies.

It is anticipated that a candidate will require 60 guided learning hours to complete this unit.

Assessment objectives	Knowledge, understanding and skills
1 Investigate developments in music technology	Developments: • in creating sounds • in recording sound • in editing sound • in accessing music: mp3, wav, aac, cda, avi, omf, aiff, au, aup, ogg, wma, aac, other Developments in equipment and assess in terms of: eg • increased functionality • miniaturisation • produce better quality products • cost • increased ease of use
2 Practise recording skills	Record **one** short piece of music with vocals and **one** short piece of instrumental music using as appropriate: • analogue and digital recorders • DI (direct input) recording • condenser microphone • dynamic microphone • use various polar patterns - omni, cardioid, hyper cardioid
3 Practise editing skills	Edit **one** short piece of vocal music and **one** short piece of instrumental music: • linear edit - edit an analogue recorded piece (tape to tape) • non-linear edit - edit a digital recorded piece using computer-based editing software

Assessment objectives	Knowledge, understanding and skills
4 Produce a piece of music on a synthesiser or midi module	Use a synthesiser or midi sound equipment to produce a short piece of music using **four** contrasting sounds: • connect equipment to computer or mixing desk • check sound levels and recording levels • use synthesiser or midi unit to produce a range of sounds
5 Practise techniques for using a digital sequencer	Manipulate **three** sound files: • copy, edit and paste sound files • pan left and right • increase and decrease volume • add effect (phase, reverb, etc) Manipulate **three** midi files: • copy, edit and paste midi files • check input and output levels • increase and decrease velocity • change bank instrument • quantize midi notes On **two** occasions prepare software sequencer for recording: • open new song • name new song • route sequencer to mixer • add audio and midi tracks to song • arm and disarm tracks for recording
6 Compare and contrast different audio encoding technologies	Investigate different audio encoding technologies: eg • Proprietary -vs- non-proprietary (freeware/shareware) • Lossy -vs- non-lossy • Compression techniques • MP3 – AAC – WMA – other • CODECs Encode **two** sound files you have produced using different encoding technologies

Assessment

This unit is centre assessed and externally moderated.

In order to achieve this unit, candidates must produce a portfolio of evidence showing that they have met all of the assessment objectives.

Portfolios of work must be produced independently. They will need to be made available, together with witness statements and any other supporting documentation, to the OCR Visiting Moderator when required.

Centres must confirm to OCR that the evidence produced by candidates is authentic. An OCR Centre Authentication Form is provided in the Centre Handbook and includes a declaration for assessors to sign. It is a requirement of the QCA Common Criteria for all Qualifications that proof of authentication is received.

Guidance on assessment and evidence requirements

Candidates may provide portfolio evidence for this unit using a range of suitable and appropriate techniques. These may include written data, the use of video, audio presentation and presentation within the body of the portfolio and display evidence. Where presentations or displays have taken place for which evidence cannot be easily included within the portfolio evidence assessor testimony/witness statements must be included, signed by the assessor(s), and supported by appropriate evidence (handouts, slides etc).

Centres may wish to organise a link with a local business and write an assignment accordingly. This may be useful in the early stages of the course.

This unit is primarily practical based and should be approached as an individual project. However, the tasks may require the support of others eg singers and instrumentalists. The focus of this unit is on the use of music technology not on music performance.

The unit requires access to a certain amount of technology and centres should make sure they have access to analogue and digital microphones, synthesisers, midi modules, sequencers and editing equipment/software. However, this unit does not require top-of-the-range software.

For Assessment Objective 1, candidates should have the opportunity to investigate a range of developments. Visits to recording studios or visiting speakers from the music industry are recommended. Information could be found through the Internet or in music magazines. Evidence could take the form of a written report or a verbal presentation supported by a witness statement.

For Assessment Objectives 2, 3, 4 and 5, evidence will take the form of recordings supported by tutor witness statements or video recordings of candidates working.

For Assessment Objective 2, candidates should have the opportunity to practise their recording skills, focussing on a vocal and an instrumental recording. These recordings will then be used when undertaking the tasks for Assessment Objective 3.

For Assessment Objective 3, candidates will edit the recordings made in Assessment Objective 2. Candidates will need to use a linear edit with analogue editing techniques and a non-linear edit using digital editing techniques.

For Assessment Objective 4, candidates should use a synthesiser or midi sound equipment to produce a short piece of music using four contrasting sounds.

For Assessment Objective 5, candidates should have the opportunity to use a digital sequencer. They will need to manipulate **three** sound files, manipulate **three** midi files and demonstrate that they can prepare software sequencer for recording.

For Assessment Objective 6, candidates should investigate and produce a report/presentation on different audio encoding technologies. This should compare both proprietary and non-proprietary software as well as different compression methods. Candidates should then encode two of the sound files they have created using different encoding technologies.

Signposting to Key Skills

- ✓ The unit contains opportunities for developing the Key Skill, and possibly for generating portfolio evidence, if teaching and learning is focused on that aim. Assessing staff will need to check each candidate's evidence against the specifications to ensure all evidence requirements have been met. Additional evidence may also be required.

Key Skill reference		Key Skill reference		Key Skill reference	
C3.1a	✓	N3.1		ICT3.1	✓
C3.1b	✓	N3.2		ICT3.2	✓
C3.2	✓	N3.3		ICT3.3	✓
C3.3	✓				

Mapping to National Occupational Standards

Occupational Standards (e-skills UK)	Title
IT Users	Make selective use of IT
IT Users	Operate a computer
IT Users	Specialist or bespoke software
IT Professional Contact Centres Telecommunications	Interpersonal and written Communication
IT Professional Telecommunications	Quality management of ICT products and services
IT User (for export to other sectors)	General uses of IT
IT User (for export to other sectors)	Purposes for using IT
IT User (for export to other sectors)	Use IT software
IT User (for export to other sectors)	Use IT systems

Resources

This section provides suggestions of suitable resources. The list is neither prescriptive nor exhaustive, and candidates should be encouraged to gather information from a variety of sources. Some suggested resources are intended for Tutor use. The resources in this section were correct at the time of production.

Books

Ballou, G (2005) — *Handbook for Sound Engineers*
Focal Press

Horne, Trevor. (2003) — *Pop Music: Technology & Creativity*
Timothy J Warner

Huber, D M (2007) — *The MIDI Manual: A Practical Guide to MIDI in the Project Studio*
Focal Press

Katz, Bob. (2003) — *Mastering Audio: the Art & the Science*
Focal Press

Mansfield, Richard. (1998) — *Studio Basics: What You Should Know Before Going into the Recording Studio*
Billboard Books

Miller, M (2007)	*Complete Idiot's Guide to Recording with Cubase* Alpha Books
Miranda, E (2001)	*Composing Music with Computers (Music Technology)* Focal Press
Rumsey, F & McCormick, T (2005)	*Sound and Recording: An Introduction* Focal Press
Russ, M (2004)	*Sound Synthesis and Sampling (Music Technology)* Focal Press
Strong, Jeff. (2002)	*Home Recording for Musicians for Dummies* John Wiley & Sons

Grading

Assessment Objective	Pass	Merit	Distinction
AO1 Investigate developments in music technology	Candidates produce a **brief** report on key developments in music technology. They show **limited** understanding of why these developments took place.	Candidates produce a **detailed** report on key development in music technology. They show **some** understanding of why these developments took place.	Candidates produce a **detailed** report on a comprehensive range of developments in music technology. They **explain** why these developments took place and their importance to the music industry.
AO2 Practise recording skills	Candidates record both analogue and digital audio at a **basic** level. Candidates record one short piece of vocal and one piece of instrumental music. **Some assistance** may be needed.	Candidates record both analogue and digital audio at a **competent** level. Candidates record one short piece of vocal and one piece of instrumental music. They **show understanding** of which techniques and microphone to use in specific circumstances. They work **independently**.	Candidates record both analogue and digital audio at a **competent** and **creative** level. Candidates record one short piece of vocal and one piece of instrumental music. They **clearly** understand the techniques and microphones to use in specific circumstances. They work **independently**.
AO3 Practise editing skills	Candidates edit both analogue and digital audio at a **basic** level. Candidates edit one short piece of vocal and one piece of instrumental music. The resulting sound quality **may have** technical flaws. **Some assistance** may be needed.	Candidates edit both analogue and digital audio at a **competent** level. Candidates edit one short piece of vocal and one piece of instrumental music. The resulting sound quality has **few** technical flaws. They work **independently**.	Candidates edit both analogue and digital audio at a **competent** and **creative** level. Candidates edit one short piece of vocal and one piece of instrumental music. The resulting sound quality has **no** technical flaws. They work **independently**.

Assessment Objective	Pass	Merit	Distinction
AO4 Produce a piece of music on a synthesiser or midi module	Candidates record music on either a synthesiser or a midi instrument using **basic** settings, containing at least **four** contrasting sounds. They produce a **basic** set of sounds for recording and manipulate those sounds using presets.	Candidates record music on either a synthesiser or a midi instrument using a **range** of settings, containing at least **four** contrasting sounds. They produce a set of sounds for recording and manipulate those sounds using presets and some digital effects.	Candidates record music on either a synthesiser or a midi instrument using **creative** but **appropriate** settings, containing at least **four** contrasting sounds. They produce a set of sounds for recording and manipulate those sounds using presets and a **wide range** of digital effects.
AO5 Practise techniques for using a digital sequencer	Candidates use an audio sequencer to manipulate at least **three** recorded audio and at least **three** midi files using **basic** techniques. They may need **some** assistance in preparing the sequencer for recording.	Candidates use an audio sequencer to manipulate at least **three** recorded audio and at least **three** midi files demonstrating a **range** of techniques. The result is **technically good**. They work **independently** to prepare the sequencer for recording. This is **mostly** suitable.	Candidates use an audio sequencer to manipulate at least **three** recorded audio and at **least** three midi files demonstrating a **wide range** of techniques. The result is **creative** and **technically good**. They work **independently** to prepare the sequencer for recording. **All** settings are suitable.
AO6 Compare and contrast different audio encoding technologies	Candidates produce a **brief** report looking at the main audio encoding technologies. They demonstrate **some** understanding of the main differences between them. Candidates encode two audio files using different encoding technologies with **little** guidance.	Candidates produce a **detailed** report looking at the main audio encoding technologies, comparing and contrasting them. They demonstrate a **clear** understanding of the differences between them. Candidates encode two audio files using different encoding technologies **without assistance**.	Candidates produce a **comprehensive** report looking at the main audio encoding technologies, comparing and contrasting them **effectively**. They demonstrate an **excellent** understanding of the differences between them. Candidates encode two audio files using different encoding technologies **without assistance** so that **no** sound quality is lost.