



Australian Government

Department of Education, Employment and Workplace Relations

CUSSOU405A Mix recorded music

Revision Number: 2

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Modification History

Release	Comments
Release 2	Created to fix formatting errors only. Released with CUS09 Music Training Package version 1.2

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to mix music that has been recorded live or in a studio. This involves balancing all instrumentals, vocals and recorded/imported sounds, and adding effects. Knowledge of musical styles and mixing conventions is essential, along with highly developed aural-perception skills and the ability to communicate effectively with clients, performers and colleagues.

Application of the Unit

Sound mixers and recording engineers apply the skills and knowledge outlined in this unit. They take the multi-track recording of a performance and mix it down to a format ready for mastering.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Pre-Requisites

Not applicable

Employability Skills Information

Not applicable

Elements and Performance Criteria Pre-Content

<i>Elements describe the essential outcomes of a unit of competency.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.</i>
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for music mix	1.1 In consultation with relevant personnel, clarify mixing requirements with reference to documentation from recording sessions 1.2 Allocate sufficient time to complete the mix and line up facilities and equipment accordingly 1.3 Anticipate problems that may arise during the mixing process and plan accordingly
2. Mix music elements	2.1 Ensure that headphones and studio monitors are set at appropriate levels 2.2 Use a variety of techniques to balance instruments and vocals 2.3 Use effects to enhance and give depth to the music mix 2.4 Apply knowledge of music genre mix styles to enhance the sound of the mix 2.5 Take account of client's tastes and preferences with regard to how the mix should sound 2.6 Clean up each track in the mix to remove unwanted sound 2.7 Seek feedback on work in progress from relevant personnel and incorporate modifications
3. Finalise mixing operations	3.1 Deliver final mix in the required format for mastering 3.2 Complete documentation relating to final mix ensuring adequate information is provided for mastering and other relevant personnel 3.3 Ensure that facilities and equipment are left clean and tidy 3.4 Evaluate own performance against technical and creative criteria and note areas for improvement

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication and teamwork skills sufficient to:
 - discuss and explain aspects of the mixing process to clients
 - respond appropriately to feedback from clients and colleagues
- highly-developed musical aural skills
- initiative and enterprise skills in the context of:
 - finding creative solutions to music mixing challenges
 - applying critical-listening skills to analyse music recordings and finding solutions to creative and/or technical problems
- literacy skills sufficient to interpret documentation from recording sessions
- planning and organisational skills sufficient to:
 - prioritise work tasks
 - meet deadlines
- problem-solving skills sufficient to:
 - promptly and effectively rectify problems with sound mixing equipment
 - find ways of compensating for any deficiency in one's own hearing
- technology skills sufficient to work with a variety of sound mixing equipment

Required knowledge

- principles and techniques of mixing music
- understanding of mixing conventions for different music genres
- understanding of sound signal paths
- well-developed understanding of psychoacoustic principles, including:
 - spatial hearing
 - direct sound
 - early sound
 - reverberant sound
 - studio and control room design
 - ergonomics
- well-developed understanding of audio characteristics, including:
 - frequency
 - pitch
 - amplitude
 - loudness
 - velocity
 - wavelength
 - acoustical phase

- timbre
- sound envelope
- issues and challenges that typically arise in the context of mixing music
- OHS principles of safe listening, including safeguards against hearing loss

Evidence Guide

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the ability to: • use all features of current music industry mixing equipment • balance instruments and vocals • incorporate a range of effects into the final mix • work cooperatively with clients and colleagues • meet deadlines.
Context of and specific resources for assessment	Assessment must ensure: • access to a range of work environments and productions where music is mixed • access to current industry-standard equipment • use of culturally appropriate processes, and techniques appropriate to the language and literacy capacity of learners and the work being performed.
Method of assessment	The following assessment methods are appropriate for this unit: • observation of candidate mixing music • direct questioning combined with review of portfolios of evidence and third-party workplace reports of on-the-job performance by candidate • authenticated recordings of music mixed by the candidate • case studies and scenarios as a basis for discussing issues and challenges that arise in the context of mixing music.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • CUSIND501A Apply music knowledge and artistic judgement • CUSMLT501A Refine aural-perception skills • CUSSOU401A Record sound.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Relevant personnel may include:	• artists, musicians and performers • clients • audio and sound engineers • directors • producers • conductors.
Mixing requirements may relate to:	• format for mastering: • audio file • digital audiotape (DAT) • 2-track analogue tape • versions: • vocal up • vocal only • instrument only • stems • deadlines • production schedule • music style • target audience.
Facilities and equipment may include:	• digital audio workstation (DAW) with software, such as: • Pro Tools • Logic • Cubase • Ableton Live • Reason • Nuendo • Garage Band • Digital Performer • Soundscape • Sonic Studio • commercial recording studio • home studio

	• analogue studio equipment: • mixing console • signal processors, including equalisers and compressors • digital studio equipment: • mixing console • multi-track recorder.
Techniques may include:	• starting the mix by manipulating only fader levels and pan positions • soloing individual instruments • starting with a basic setup of all instruments and vocals and refining them in relation to each other • determining the element or elements that work best and building the mix around them • reducing frequencies on some instruments to give the sound of others more prominence • using automation to control various parameters of equipment in real time within the mix • modifying recorded input signal through the use of: • faders • pan pots • equalisers • compressors • gates • various plug-ins or signal processors.
Effects may include:	• reverb • delay • echo • reverse echo • pitch shift • pitch correction • time stretching • robotic voice effects • flanger • phaser.
Elements of mix styles may include:	• drum and bass levels • level of lead vocals • level of vocals in relation to instruments • relative volumes of instruments for foregrounding and backgrounding

	• relative levels of added effects.
<i>Cleaning up</i> tracks may include:	• eliminating amp hiss • eliminating crosstalk/spill • using mutes and gates • deleting/erasing sections for arrangement purposes • eliminating circuit noise.
<i>Format</i> may be:	• mono • stereo • surround sound.
<i>Documentation</i> may include:	• pre-mix scripts • mixing sheets • track sheets • cue sheets • dubbing sheets • queries • notes • manuals.

Unit Sector(s)

Media and entertainment production - audio/sound